

## **Historic, archived document**

Do not assume content reflects current  
scientific knowledge, policies, or  
practices.

Ag 84 F  
Cap 4

# Marketing FARM POULTRY

Farmers' bulletin no. 2030



U. S. DEPARTMENT OF AGRICULTURE



**T**HE PURPOSE of this bulletin is to aid the producer in preparing and selling to the best possible advantage his live and processed poultry. So far as it is possible in a publication of this type, information pertaining to the preparation for market and the marketing of all kinds and classes of poultry from all types of farms is included. When reference is not made to a specific kind of poultry, the discussion usually applies to all kinds.

Poultry means any kind of domesticated bird, including but not being limited to chickens, turkeys, ducks, geese, pigeons, and guineas.

The word "processed," as used in this publication, usually refers to poultry that has been dressed or made ready to cook (eviscerated or cut-up). Canned and smoked poultry is also processed, but is not often referred to in this bulletin.

Dressed poultry is poultry that has been slaughtered for human food, has the head, feet, and viscera intact, and from which the blood and feathers have been removed.

Ready-to-cook poultry is any eviscerated poultry or any cut-up or disjointed portion thereof. This term is used to refer to the final product.

Eviscerated poultry is dressed poultry from which the pinfeathers, vestigial feathers (hair or down, as the case may be), head, shanks, crop, oil gland, trachea, esophagus, entrails, reproductive organs, and lungs have been removed, and that is, with or without the giblets, ready to cook without need of further processing.

Kind of poultry refers to chickens, turkeys, ducks, geese, guineas, and pigeons.

Class of poultry is any subdivision of kind and is based on the essential physical characteristics that differentiate between major groups of the same kind. (Example: Broilers or fryers, roasters, capons, and stags, are classes of chickens.)

This bulletin supersedes Farmers' Bulletin No. 1377, "Marketing Poultry."

# MARKETING FARM POULTRY

By O. F. JOHNDREW, JR., *marketing specialist*, R. C. LARKIN, *agricultural economist*, and T. H. POND, *marketing specialist, Poultry Branch, Production and Marketing Administration*<sup>1</sup>

## CONTENTS

	Page		Page
Sources of farm poultry for market.....	2	Grading and inspection of processed poultry.....	40
Where poultry is raised.....	2	Producer grading and inspection.....	41
Types of farms.....	2	Federal-State grading and inspection.....	43
Some considerations in planning the marketing program.....	4	Packaging processed poultry.....	48
Surplus and deficit poultry-meat producing States.....	4	Packing chilled poultry for shipment.....	49
Fluctuation of poultry prices.....	6	Packing frozen poultry for shipment.....	52
Live or processed poultry.....	7	Packaging for retail sales.....	53
Financing.....	10	Freezing and storing processed poultry.....	57
Available market information.....	11	Selling poultry.....	59
Preparing live poultry for market.....	12	Methods of selling.....	59
Selecting.....	12	Pricing.....	62
Finishing.....	15	Advertising.....	63
Crating.....	17	Transporting of poultry.....	63
Processing poultry.....	17	Factors related to profits in marketing processed poultry.....	64
Killing and dressing.....	18	Points to remember in marketing farm poultry.....	66
Eviscerating.....	27		
Cutting up.....	32		
Canning and smoking.....	35		
Recommendations for farm processing plants.....	35		

**P**OULTRY AND EGGS have always been a major source of income to farmers in the United States. In 1949, the gross farm income<sup>2</sup> from eggs and poultry was more than 3½ billion dollars. It was exceeded by that from only three other groups of major agricultural products—cattle and calves, dairy products, and hogs. The income from poultry alone represented about 40 percent of the gross farm income for poultry and eggs. Chickens, commercial broilers, and turkeys, in that order, accounted for most of the income from poultry.

<sup>1</sup> Acknowledgment is made to Clara Butler, agricultural economist, Poultry Branch, for the tabulations used in this publication. The authors also express their appreciation to the many workers in the following agencies who reviewed this publication: The Production and Marketing Administration, the Bureau of Agricultural Economics, and the Farm Credit Administration, U. S. Department of Agriculture, and the Food and Drug Administration of the Federal Security Agency.

<sup>2</sup> Gross farm income is the cash receipts from farm marketings added to the value of the products consumed on the farm.

Poultry meat has become an increasingly important source of high-protein food in the United States. During the years immediately before World War II, consumption of chicken meat ranged from 18 to 20 pounds per person per year. During the war, consumption increased rapidly, reaching a yearly average of 27 pounds per capita and has remained at approximately this level since then. In the same period, consumption of turkey meat increased from 2.0 to 3.8 pounds per person per year during the war, and to nearly 5 pounds in 1950.

## **SOURCES OF FARM POULTRY FOR MARKET**

According to the 1945 census of agriculture, about 4 out of 5 farms in the United States had chickens on hand January 1 of that year. Almost half of these farms, however, had flocks with fewer than 50 head each, and almost 90 percent had flocks of under 200 head each. The average number on hand per farm for the Nation as a whole was only 86 head. During recent years there has been a rather rapid trend toward specialized production, many farms having from several thousand to several hundred thousand chickens for both meat and egg production.

The trend from earlier years has been toward fewer farms raising chickens and a larger number of chickens per farm. A similar but more pronounced trend has also been evident in the production of turkeys. In 1939, 389,352 farms reported that turkeys were raised. In 1944, the number reporting was only 193,540. The average number raised per farm, however, increased from 72 head in 1939 to 141 in 1944.

## **WHERE POULTRY IS RAISED**

Poultry is raised throughout the United States. There is, however, a tendency for production to be concentrated in certain areas. Figure 1 shows the areas where chickens were raised, and figure 2, the areas where turkeys were raised in 1944.

In 1950, commercial broiler production was most heavily concentrated in areas within Delaware, Georgia, Maryland, Arkansas, Virginia, Texas, Indiana, and North Carolina, very much as it was in 1944 (fig. 1). About a third of the chickens other than commercial broilers were raised in Iowa, Texas, Pennsylvania, Minnesota, Missouri, and Illinois in 1950.

In 1950, turkey production was concentrated most heavily on the west coast, especially in California, much as it was in 1944 (fig. 2). Minnesota, Texas, and Iowa also had areas of concentrated production.

The production of ducks is most heavily concentrated on Long Island, N. Y. An estimated 60 percent of all ducks raised in the United States comes from this area. Geese are raised principally in the Mississippi Valley area.

## **TYPES OF FARMS**

To a large extent, chicken meat is a byproduct of egg production. On some commercial egg farms, the practice is to buy pullet chicks, carry them 1 year for egg production, and then sell the entire flock. On other commercial egg farms, and usually in farm flocks of chickens,



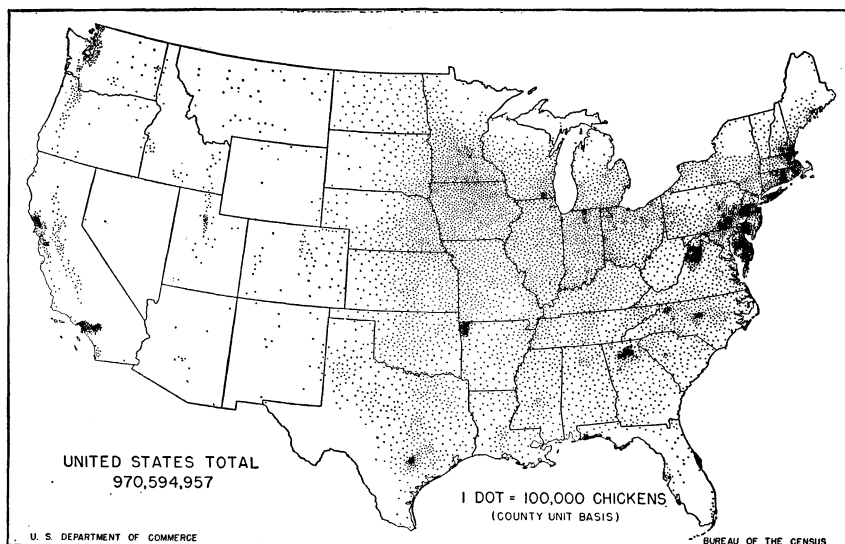


FIGURE 1.—Number of chickens (including broilers) raised in the United States in 1944.

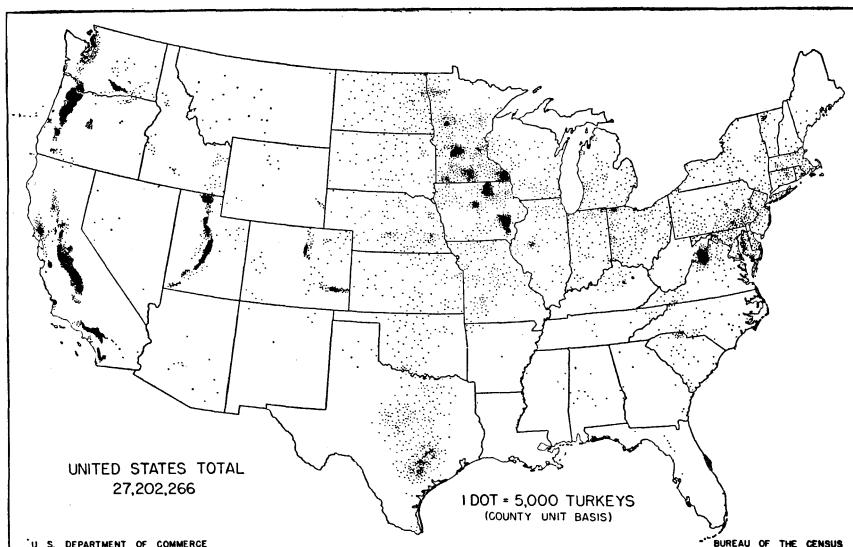


FIGURE 2.—Number of turkeys raised in the United States in 1944.

the practice is to buy straight-run<sup>3</sup> chicks, raise them to a weight of 3 or 4 pounds and then separate the pullets from the cockerels, and sell the cockerels. The laying birds are sold after 1 or 2 years of egg production. Culled birds from commercial egg farms are usually sold throughout the year. Birds culled from farm flocks during the year are either sold or consumed at home.

<sup>3</sup> Pullets and cockerels.

Production of chicken meat on commercial broiler farms is a highly specialized business. On the most efficient of such farms, it is not unusual for one man to do all the work in connection with raising as many as 30,000 birds at one time. During 1 year, 3 to 4 lots of such size will be produced and marketed. In 1950, approximately 40 percent of all chicken meat sold was produced on farms such as these. It is likely that in the years ahead, chicken meat production on commercial broiler farms will become increasingly important.

The production of turkeys is also becoming a highly specialized industry. Flocks of 5,000 birds or more handled by one man are common in many areas.

Generally, poultry from the sources just discussed, as well as from breeding farms, are marketed alive, a very small amount of the total value marketed being processed. On the other hand, poultry from commercial duck farms and a growing number of specialized poultry farms is usually marketed in dressed or ready-to-cook form (see definitions on page II).

## **SOME CONSIDERATIONS IN PLANNING THE MARKETING PROGRAM**

To receive the greatest possible returns from his poultry, every producer should plan a marketing program. This suggestion applies not only to the producer already in business, but also to a person who is thinking of going into the poultry business. Since economic and geographic conditions differ in various parts of the country, a person who contemplates establishing himself in the poultry business should become familiar with the considerations mentioned in this bulletin and should consult the county agent and members of the college of agriculture in the State in which he wishes to locate. Not only the marketing part of the over-all program should be discussed with these officials, but also the specific location and type of poultry farm. Capital requirements and other management factors should be investigated thoroughly before a farm is obtained.

The producer already in business should consult specialists in his State college of agriculture and State department of agriculture concerning the specific application of the considerations discussed herein, as well as any other factors that apply to the particular area in which he is located.

## **SURPLUS AND DEFICIT POULTRY-MEAT PRODUCING STATES**

The figures in each State, shown on the map in figure 3, represent the net surplus or deficit supply of chicken meat on a per capita basis for that State in 1950. When the per capita production in a State exceeds the national average per capita consumption, it is assumed that a surplus over local needs is being produced and the figure in that State has a plus sign before it. When the per capita production is less than the national average per capita consumption, the figure has a minus sign preceding it. The minus sign indicates a deficit production of chicken meat.





## FLUCTUATION OF POULTRY PRICES

Prices for poultry fluctuate like prices for most other foods. This is partly because of changes in the supply of and the demand for poultry meat. Such price fluctuations are usual and are not, except infrequently, due to the arbitrary dictation of the buyer or seller. In general, the more dollars that consumers have to spend, the more dollars they will spend for poultry. If supplies of poultry are large in relation to the number of dollars consumers have to spend, prices will likely decline. If supplies of poultry are short, prices will likely go up.

The price that consumers are willing to pay for poultry is also greatly influenced by the general level of prices paid for other foods, especially red meats. In addition, consumers eat varying quantities of poultry meat during different seasons of the year. Poultry prices also fluctuate because of consumer preference for the quality, form (dressed or ready-to-cook), and appearance of the poultry offered. A change in weather conditions or a national or a religious holiday affects poultry consumption. All these factors, including the level of current production and storage holdings, affect to a varying degree the price producers receive for their birds.

Changes in the methods of producing and marketing poultry during the last 20 years have greatly reduced the season-to-season fluctuations of poultry prices. Hens were formerly culled from the laying flock and marketed in quantity beginning usually in the fall and extending through December. Such seasonal marketings frequently resulted in wide seasonal price fluctuations. In recent years, however, culling has become more general throughout the year. The fact that seasonal fluctuations in hen prices have declined somewhat is also partly because of earlier and year-round hatching for flock replacement purposes.

As supplies of young chickens from commercial broiler farms have increased, seasonal fluctuations in prices of young chickens have also become less pronounced.

The practice of placing poultry in cold storage for periods of 6 months or more has also materially reduced seasonal price fluctuations. This practice, however, is now declining in importance owing to the expansion of year-round production of commercial broilers. Cold storage, although declining in importance for relatively long periods, is increasing in importance for short periods such as 1 to 3 months.

Commercial broiler production in the major production areas is characterized by rather frequent and sharp price changes. Since the present demand for broilers is primarily for a fresh-killed, ice-packed product, such sharp price changes cannot easily be avoided. This problem will likely be less acute in the future if the demand for frozen ready-to-cook poultry increases. When a substantial proportion of the broiler crop can be eviscerated and frozen, price declines and fluctuations can be reduced by storing the birds during periods of low prices and selling them when prices increase.

Although opportunities for obtaining better-than-average prices through "off-season" production are considerably more limited than they were even 10 years ago, the opportunities that are available should

be taken advantage of. Hen prices are generally highest during the late winter and early spring and lowest in the fall and early winter. As far as the low-producing hens in the average farm flock are concerned, it is not advisable to postpone marketing them in order to obtain higher prices in later months. The primary profit from a hen is through her conversion of feed into eggs. When a hen ceases to lay, or lays very infrequently, she should be taken from the flock unless it is the plan to carry hens over for another year. This practice, however, is not recommended as the efficiency of a hen in converting feed to eggs is lower the second and succeeding years.

Turkeys are marketed primarily to coincide with the Thanksgiving and Christmas holidays. The marketing season now, however, is considerably longer than it used to be. Young turkeys begin to move in appreciable volume as early as August. During a year when production is substantially higher than the preceding year, turkey prices received by producers usually decline as the marketing season progresses. The reverse is usually true when the crop is relatively small (a short crop often follows a large one). Although these facts should be kept in mind, it is not advisable to hold turkeys on the farm very long after they reach proper finish and marketable condition. After this point is reached, there is a rapid decline in feed efficiency. In other words, the added feed consumed usually does not result in a sufficient increase in weight or condition to pay for the additional feed. It is equally important to remember that turkeys which are marketed prior to maturity or proper finish, in order to obtain higher prices, are usually of lower grade and lighter in weight so that the advantages of the higher prices may be offset.

## **LIVE OR PROCESSED POULTRY**

One of the problems confronting the poultry producer when planning a marketing program is whether he should market his poultry alive or dressed. To a great extent, his choice depends on the prices of live and processed poultry, the competition among buyers for his poultry, the demands of the market on which he desires to sell, his proximity to market, the volume of poultry, available labor for processing, and the cost of processing facilities.

The prices of live poultry are contingent on factors discussed under the heading "Fluctuation of Poultry Prices." The producer is largely dependent upon the poultry buyers in his particular area for the prices he receives, unless he sells live birds to a special outlet. When there are several buyers of live poultry in one area, competition is sometimes greater than when there are only one or two buyers. Such competition often means that more favorable prices are paid the producer for his birds. In areas where competition is active there may not be as great an opportunity to increase net returns by processing poultry on the farm.

The producer should keep in mind the loss (shrinkage) due to dressing and eviscerating in comparing the relative prices offered for his live and processed poultry.<sup>4</sup> Prices for dressed and ready-to-cook (eviscerated) birds should be at least high enough to cover not only

---

<sup>4</sup> See definitions on page II.

the loss in weight due to processing, but also the processing and packaging costs. The first step in computing prices for processed poultry that are comparable with quoted prices for live poultry, is to determine the approximate amount of shrinkage in processing the birds.

Table 1 gives some figures on shrinkages resulting from dressing and eviscerating poultry. These figures may be used by producers to determine relative prices for processed poultry. For example, if the price paid producers on a particular day were 24 cents per pound for 3½-pound broilers, a price of approximately 27.3 cents per pound for dressed broilers would be necessary to compensate the producer for shrinkage in dressing. To arrive at the dressed price per pound of 27.3 cents, a shrinkage of 12 percent from live to dressed weight was used (table 1). If the shrinkage from dressing were 12 percent, the weight of the dressed carcass would be 88 percent (100 percent—12 percent) of its original live weight. Dividing 24 cents by 88 percent gives the relative dressed price of 27.3 cents.

In the same way, by using a shrinkage from live to ready-to-cook weight of 38 percent (table 1), it can be determined, when the live price for 3½-pound broilers is 24 cents per pound, that the price equivalent for ready-to-cook broilers should be 38.7 cents per pound.

TABLE 1.—*Percentage of shrinkage of poultry from dressing and eviscerating, by kind and class of poultry*

Kind and class of poultry	Live weight	Approximate shrinkage from <sup>1</sup>	
		Live to dressed weight	Live to ready-to-cook weight
Chickens:	<i>Pounds</i>	<i>Percent</i>	<i>Percent</i>
Broilers and fryers.....	Under 4.....	11 to 12.....	34 to 38.
Roasters.....	4 and over.....	9½ to 11.....	30 to 35.
Hens (stewing chickens; fowl).....	All weights.....	10 to 11.....	31 to 36.
Turkeys.....	Under 13.....	10½ to 11.....	24 to 28.
	13 to 25.....	9 to 10.....	22 to 28.
	25 and over.....	9 to 9½.....	20 to 23.

<sup>1</sup> The figures in this table represent ranges in shrinkage percentages obtained from a number of commercial processors and some farm and laboratory processing operations.

These prices per pound for dressed and ready-to-cook birds do not include processing and packaging costs. They compensate only for loss in weight resulting from dressing and eviscerating. A fairly recent study <sup>5</sup> showed the processing and packaging costs (excluding shrinkage) to be 6.2 cents per pound for dressing chickens and 7.5 cents per pound for eviscerating chickens. The average live weight of the chickens used in this study was about 3.5 pounds per bird. As processing and packaging costs vary, these cost figures are used only to illustrate the procedure in computing the relative prices of processed chickens in comparison with a given price for live chickens. A poul-

<sup>5</sup> A study conducted in New York State as one phase of a Northeastern Regional study by State and regional funds from the Research and Marketing Act of 1946. The results are published in Cornell University Agricultural Experiment Station Bulletin 863, entitled "Marketing of Dressed Chickens by New York Poultrymen, 1946-47."



try producer should use his own processing and packaging costs in a similar manner. The average processing and packaging costs for a few producers in an area or from a study conducted in such an area can be used by producers who contemplate entering the processing business. Processing and packaging costs include charges for buildings and equipment, man labor, truck and automobile, fuel and electricity, packaging materials, and other items.

When the processing and packaging cost of 6.2 cents per pound of dressed chicken is added to the price of 27.3 cents per pound, which compensates only for dressing loss, the minimum price a producer should receive for his dressed broilers is 33.5 cents per pound when live broilers are selling at 24 cents per pound. The minimum price he should receive for ready-to-cook broilers is 46.2 cents per pound when live broilers are selling at 24 cents per pound. The same procedure can be followed for comparing prices of any kind or class of poultry.

The producer will want to decide whether he should sell or process his poultry himself or join other producers in selling or processing it. In many parts of the country, producers have set up or joined cooperative associations which sell their poultry for them alive, or dress and market it at cost. There may be many advantages to producers in the joint handling of their poultry after it leaves the farm.<sup>6</sup>

A poultry producer already established in the processing business should recompute the prices to be charged for his dressed or ready-to-cook poultry every time there is a change in live prices. In estimating the prices he should receive, the following items should be considered: Live poultry prices, the loss from dressing or eviscerating, and the cost of processing and packaging. If the producer is not actually receiving enough for his dressed or ready-to-cook poultry to at least pay the processing and packaging costs and to compensate for loss (shrinkage) in processing he may find it more profitable to sell his birds alive, at least during certain periods of the year.

Producers who consider going into the processed poultry business should try to obtain prices for live, dressed, and ready-to-cook poultry that he would have received had he been in business for the last year or two. If such prices can be obtained, it will then not be too difficult for him to determine, by using the pricing methods just described, which of the three methods of marketing would have yielded the greatest net returns.

Before reaching any conclusions as to whether poultry should be sold alive or processed, other factors, such as those discussed later in this bulletin, should be considered, as highest profits are not always realized by selling poultry in its highest priced form.

If the demand of a particular market on which a producer desires to sell his poultry is for frozen ready-to-cook birds, this demand should be catered to. If the demand is for kosher-killed poultry for the Jewish trade, then, of course, live poultry should be furnished.

The distance from market outlets must be considered because of the shrinkage involved in hauling live poultry. This shrinkage usually varies between  $\frac{1}{2}$  to 5 percent, the amount depending on the distance

---

<sup>6</sup> Information relative to the cooperative dressing and marketing of poultry may be obtained by writing to the Farm Credit Administration, U. S. Department of Agriculture, Washington 25, D. C.

to market, temperature and humidity, how the birds were handled before and during transporting, the kind, class, and breed of poultry, as well as other factors.

Any producer who is thinking of going into the business of marketing processed poultry, or who is now in such a business, should, of course, have sufficient volume to operate profitably. The volume will vary with different situations. In general, however, as the number of birds processed increases, total operating costs per pound will decline and returns for labor will increase. Larger businesses usually have greater efficiency and profits. For example, in the study mentioned previously, the range in operating costs was from 13.8 cents per pound for the group of producers processing the fewest chickens (under 1,000) to 5.7 cents per pound for the group processing the largest volume (over 9,999). Returns for man labor ranged from 47 cents per hour for those who processed less than 1,000 chickens, to \$1.31 per hour for those who processed over 9,999 chickens. If a producer does not have sufficient volume to process at a profit, it will undoubtedly pay him to sell his poultry alive.

The availability of labor for processing poultry should be considered before entering this phase of the business.

## FINANCING

One of the most important factors involved in establishing and maintaining a successful poultry business is adequate and sound financing. The need for both fixed and operating capital, in adequate amounts, has grown significantly in recent years because of current high prices for land, buildings, and equipment. For example, the average capital required for land, buildings, and equipment for starting a commercial broiler enterprise is about 1 dollar per bird compared with approximately half of that amount a few years ago. It is, therefore, extremely important for the producer to investigate sources of the kind of credit he needs.

Two major types of credit used by individual poultry producers are: Long-term credit such as that used in purchasing land, buildings, and equipment; and short-term credit such as that used in financing the growing of young stock. A third type of credit such as that used to finance day-to-day operations is sometimes used. Long-term credit can be obtained from banks, insurance companies, individuals, or from Federal land banks.<sup>7</sup> Short-term loans may be obtained from banks, individuals, or from production credit associations.<sup>8</sup> Feed companies, hatcheries, and sometimes processors extend credit on feed and chicks, which are the largest cost items. Credit for day-to-day operations which may not be carried for more than 30 days, can be obtained from banks or from individuals.

---

<sup>7</sup> Contact the nearest National Farm Loan Association office or write to the Farm Credit Administration, U. S. Department of Agriculture, Washington 25, D. C., for further information. Ask for Circular No. 1, entitled "Federal Land Bank Loans."

<sup>8</sup> Contact the nearest Production Credit Association office or write to the Farm Credit Administration, U. S. Department of Agriculture, Washington 25, D. C., for further information. Ask for Circular No. 3, entitled "Loans by Production Credit Associations."

Banks for cooperatives make commodity, operating capital, and facility loans to eligible farmers' marketing and purchasing cooperative associations but not to individual producers.<sup>9</sup>

### AVAILABLE MARKET INFORMATION

The United States Department of Agriculture collects and publishes a great deal of current information, most of which can be obtained without cost.<sup>10</sup> Such information can assist poultry producers in determining when to sell their products. Reports that may be of interest are as follows:

**Broiler chick reports.** These reports, issued weekly, indicate the number of eggs set, chicks hatched, and chicks placed on farms for broiler production purposes in each of the major production areas. Production in these areas represents over 50 percent of the total commercial broiler production in the United States. By analyzing these data, a commercial broiler producer can estimate rather accurately the number of broilers that will be ready for market 3 months in advance. By comparing the data with similar data for earlier months, he can obtain some indication of the probable direction of prices in the weeks ahead.

**Daily market reports.** These reports give daily market quotations of prices received by producers in the major production areas. They indicate the condition of the markets, that is, whether weak, steady, or firm, the demand for various classes of poultry, supply conditions, and other information relative to the general market situation. They also give wholesale prices for different classes of live and processed chickens at the major poultry markets. During the turkey marketing season, the reports list wholesale turkey prices (live and processed), and a few of them list producer prices and comment on market conditions.

**Cold storage reports.** These reports indicate the total quantities of poultry in cold storage on the first of every month. Quantities of broilers, fryers, hens, roasters, turkeys, and ducks are listed separately. The size of the month-to-month changes in these figures, as well as the total quantities held, materially influences poultry prices currently and from one year to the next.

**Crop production reports.** These reports give a monthly inventory of the number of chickens on farms. Although the effect of these numbers on poultry prices is not clearly evident, they are important, especially from one year to the next. Since most chicken meat is produced as a byproduct of the production of eggs, the number of chickens on farms is indicative of the quantity of meat that can be expected from this source.

**Hatchery production reports.** These reports indicate the number of chicks hatched in commercial hatcheries in the United States. Any change in the number of chicks hatched reflects the number of chickens which will later be sold off farms. Also of importance is the rate of

---

<sup>9</sup> Contact the nearest Bank for Cooperatives or write to the Farm Credit Administration, U. S. Department of Agriculture, Washington 25, D. C., for further information. Ask for Circular No. 6, entitled "Loans to Farmers' Cooperatives."

<sup>10</sup> Write to the Office of Information, U. S. Department of Agriculture, Washington 25, D. C.

monthly hatching. A relatively high rate of hatch early in the spring indicates an early fall production of eggs, which in turn will likely mean an earlier-than-usual movement of old hens off farms.

**Intentions reports.** Early each year, farmers are asked by the Bureau of Agricultural Economics of the Department how many chickens and turkeys they plan to raise during the current year. Although it seldom happens that they raise exactly the number stated, the reports do indicate rather accurately whether production will be up or down, and in general, how much. These reports, like the three reports just mentioned, indicate in general the size of poultry meat supplies in the coming months. Since total supplies influence prices, these reports should be carefully considered by poultrymen.

**Poultry and egg situation reports.** These reports, which are published monthly by the Bureau of Agricultural Economics, summarize the information on production, stocks, prices, and demand. They should be considered in evaluating the current and prospective poultry situation.

**Demand and price situation reports.** These reports deal primarily with such information as production of durable and nondurable goods, wholesale food price levels, employment, and the level of personal income. Although such information may not appear to be of interest to poultry producers, actually it is of great importance in determining the prices they receive. The relationship between how much people have to spend and how much they spend on poultry meat is rather consistent. What people have to spend is, in turn, closely related to the number employed and the level of wages.

## **PREPARING LIVE POULTRY FOR MARKET**

Some poultry producers take special steps in preparing their live birds for market. These special steps, which include selecting birds for market as well as finishing them by feeding special rations a short time before marketing, are often considered unprofitable. There are times, however, when premiums paid on some markets are high enough to repay the producer for performing these operations.

In this connection, it should be emphasized that within the range of prices offered on a market for a specific kind and class of poultry, the higher price ordinarily will be paid for birds of better quality. A uniform lot of high quality birds is more attractive than a miscellaneous lot. It usually sells more readily.

Under conditions such as these, it will pay some poultry producers to give serious consideration to selecting their birds carefully and to feeding special rations to certain kinds and classes of poultry. They should study their own operations carefully before deciding.

## **SELECTING**

Before actually selecting live birds for market, a poultry producer should decide on the factors he is going to use in selecting and to what degree he is going to apply them. A summary of the United States standards of quality for live poultry on an individual bird basis is given on page 13. It may be used as a basis for selecting live poultry

for market. Live birds should be selected by class and for uniformity in size and quality.<sup>11</sup> Birds showing evidences of disease, emaciation, or serious defects should not be marketed.

UNITED STATES DEPARTMENT OF AGRICULTURE, PRODUCTION AND MARKETING  
ADMINISTRATION

*Summary of standards of quality for live poultry on an individual bird basis*

(Minimum requirements and maximum defects permitted)

Factor	A or No. 1 quality	B or No. 2 quality	C or No. 3 quality
Health and vigor	Alert, bright eyes, healthy, vigorous.	Good health and vigor.	Lacking in vigor.
Feathering	Well covered with feathers showing luster or sheen.	Fairly well covered with feathers.	Complete lack of plumage feathers on back.
Conformation	Slight scattering of pinfeathers.	Moderate number of pinfeathers.	Large number of pinfeathers.
Breastbone	Normal	Practically normal	Abnormal.
	Slight curve, $\frac{1}{8}$ " dent (chickens), $\frac{1}{4}$ " dent (turkeys).	Slightly crooked	Crooked.
Back	Normal (except slight curve).	Moderately crooked.	Crooked or hunched back.
Legs and wings.	Normal	Slightly misshapen.	Misshapen.
Fleshing	Well fleshed, moderately broad and long breast.	Fairly well fleshed	Poorly developed, narrow breast, thin covering of flesh.
Fat covering	Well covered, some fat under skin over entire carcass.	Enough fat on breast and legs to prevent a distinct appearance of flesh through skin.	Lacking in fat covering on back and thighs, small amount in feather tracks.
	Chicken fryers and turkey fryers and young toms only moderate covering.	Hens or fowl may have excessive abdominal fat.	
	No excess abdominal fat.		
Defects	Slight	Moderate	Serious.
Tears and broken bones.	Free	Free	Free.
Bruises, scratches, and callouses.	Slight skin bruises, scratches, and callouses.	Moderate (except only slight flesh bruises).	Unlimited to extent no part unfit for food.
Shanks	Slightly scaly	Moderately scaly	Seriously scaly.

STANDARDS EFFECTIVE JANUARY 1, 1950

<sup>11</sup> Further information may be found in the "Regulations Governing the Grading and Inspection of Poultry and Edible Products Thereof and United States Specifications for Classes, Standards, and Grades with Respect Thereto." Copies may be obtained from the Production and Marketing Administration, U. S. Department of Agriculture, Washington 25, D. C.

In selecting live birds for market, try to visualize the points that are seen in processed poultry of high quality (see summaries on pages 44 and 46). Remember that the consumers should, and often do, look for certain features as a guide to tenderness and meatiness in the processed birds they buy. Tenderness depends largely upon the age of the bird and the amount of fat. Meatiness depends to a great extent on quality of fleshing which is correlated with the proportion of meat to bone. By keeping these points in mind as the live birds are being examined, a better job of selecting can be done and the first step in ultimately giving consumers the type of products they want has been accomplished.

After the factors to be used in selecting are decided on, the birds should be examined. In large flocks, such as those found on commercial broiler farms or turkey ranches, it is not practical to examine every bird. Birds picked at random throughout the flock and examined on the spot give a fairly accurate estimate of the general quality. In smaller flocks, particularly when every bird is to be examined, the birds may be driven into pens, or into a corner of a room or pen that has been closed off with a panel of wire or netting, and examined. A method that is used particularly for catching turkeys to examine them, is to drive the birds into a chute so constructed that the birds can be caught without trampling on one another.

If the birds are to be sold immediately, they can be placed in poultry coops after they are examined and separated according to quality. If they are to be fed a special ration before they are sold, the selected birds can be held in pens, with or without runways, or they can be placed in fattening crates.

The following steps are recommended for examining the heavier kinds and classes of poultry, particularly turkeys:

- (1) Catch the birds between the middle and upper joints of the wing on the side opposite from where the operator is standing. The thumb should be between the wing and the body of the bird. The fingers should be closed around the wing. The flesh around the bone of the wing should not be twisted or held too tightly, for either action may cause discoloration. If it is impossible to pick up a turkey or other large bird by the wing, both legs should be seized at one time and the bird lifted in such a way that the breast will not strike the ground. The legs should be caught below the knees, a firm grip of the hand will bruise and discolor the fleshy part of the leg. Wire catching hooks should not be used to catch the birds since they are likely to bruise the legs, and there is no way to control wing flapping until the bird can be held with the hand.

- (2) If the operator is working alone, he can rest the bird on the palm of one hand with the thumb and third finger encircling the legs. The other hand can be used to examine the bird and as an aid in steadying the bird as the examination progresses.

- (3) Examine each bird for health and vigor, according to the summary sheet on page 13.

- (4) Examine each bird for conformation, fleshing, fat covering, and defects, according to the summary sheet, by running one hand from the top of the breast, down along the breast to the rear of the bird.

Proceed in the same manner along the bird's back, from top to bottom, using the knee to support the breast.

(5) Examine each bird for feathering, giving particular attention to freedom from pinfeathers. Pass the free hand through the feathers against the natural direction in which they grow. This will enable the operator to see most of the pinfeathers.

For holding and examining lighter-weight birds the same procedure should be followed except for part of the first step. Lighter-weight birds are usually picked up by grasping the wings near the body, lifting the bird and placing it breast down on the hand (fig. 5).

### FINISHING

With modern methods of feeding and management it is not usually necessary to feed special "fattening" rations to poultry, a short time



FIGURE 5.—Weighing-in procedure illustrating one method of lifting and examining lighter-weight birds.

before selling, in order to finish them properly. On farms such as commercial broiler farms and large turkey and duck farms, the management practices and feeding methods are such that the birds ordinarily reach the proper stage of finish at the right time for marketing. However, on smaller farms, particularly where poultry is not a major enterprise, it may pay to feed a special ration to some classes of poultry. For example, old hens may need a short "special finishing" period, or it may pay to feed cockerels to be marketed as broilers a special ration before selling. Small flocks of ducks and geese are often given a "special finishing" ration.

Producers who do finish their live poultry by special feedings should confine their birds in pens, fattening crates, or batteries. Some producers feed a special ration to chickens several days before marketing them, whereas others keep their birds on a finishing ration from 1 to 3 weeks. Broilers of the heavy breeds weighing from  $1\frac{1}{2}$  to 2 pounds at the beginning of the finishing process, require approxi-



mately  $3\frac{1}{4}$  to  $4\frac{1}{2}$  pounds of feed for each pound of gain. If the chickens are the Leghorn breed, they may require approximately  $4\frac{1}{2}$  to  $5\frac{1}{2}$  pounds of feed per pound of gain. Roasters of 4 to 5 pounds require approximately  $4\frac{1}{2}$  to 7 pounds of feed per pound of gain and capons and fowls usually require 8 to 12 pounds of feed per pound of gain.

Producers who feed a special ration to ducklings should begin the finishing period about 2 weeks before the birds are marketed and the ducklings should be fed three times a day. The birds may require from 5 to 7 pounds of feed per pound of gain during the finishing period. For further information pertaining to finishing rations for poultry, consult specialists in your State college of agriculture or visit a local feed dealer.

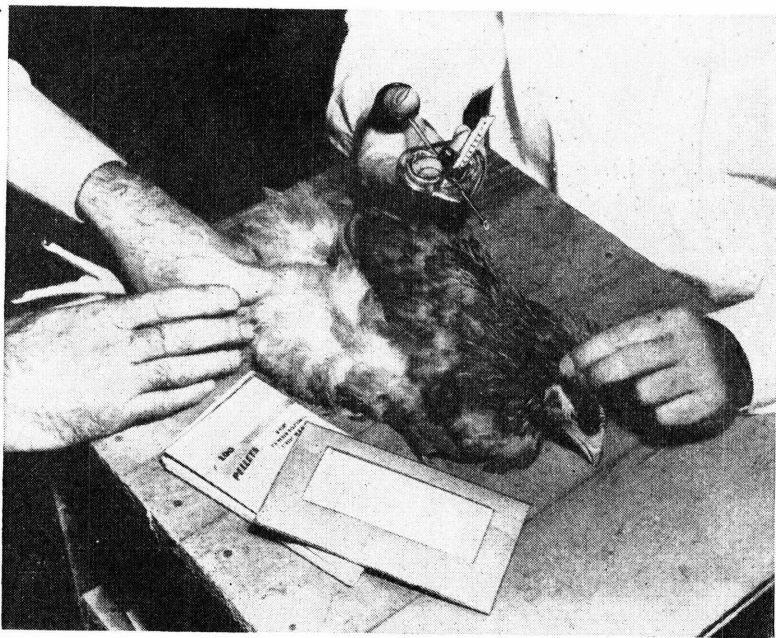


FIGURE 6.—The proper position for implanting a diethylstilbestrol pellet in the neck of a chicken.

Diethylstilbestrol pellets are being used by many producers for finishing chickens. Under proper conditions and with correct application, the pellets may produce a better finish and have a temporary caponizing effect on male birds. The pellets are probably more satisfactory when used in chickens, particularly cockerels.

For chickens *only 1 pellet containing 15 milligrams of diethylstilbestrol* should be implanted, between the skin and the muscle of the neck, near the skull (fig. 6).

In chickens under 15 weeks of age, pellets should be implanted from 3 to 5 weeks before killing them for human consumption. In chickens over 15 weeks of age, pellets should be implanted from 5 to 6 weeks before killing them. Birds should be sold by the end of 8 weeks after



pellets are implanted as after that period the effect of the pellet begins to wear off. Two operators can treat about 300 birds per hour.

Meat from a bird that has been properly treated with 1 pellet containing 15 milligrams of diethylstilbestrol is not considered harmful to human beings. The heads and necks from treated birds which may contain pellet residues should not be fed to animals.

## CRATING

Birds that are being crated for market should be handled carefully. Loss in value from rough handling in crating birds has been estimated by some producers to be as high as 2 percent of the sales value. This loss is due to bruises, occasional broken bones, and even death in extreme cases of carelessness. Birds to be sold to buyers who bring their trucks to the farm should be weighed in the producer's coops and then transferred to the buyer's coops. For safety, the transfer should be made at some place on the farm other than near the poultry yards or buildings. Buyers should not be allowed near the poultry premises because some of their trucks may be disease carriers. After buyers leave the farm, the producer's coops should be thoroughly cleaned and disinfected before being returned to the poultry plant. If the birds have not been selected for class, size, and quality before crating begins, they should be selected and separated while the crating operation is in progress.

Some poultry producers truck their own live birds to processing plants or shipping points. They usually use rod or slat coops 3 feet long by 2 feet wide by 1 foot high for chickens and ducks. These coops will accommodate 12 average-sized fowls, from 14 to 20 fryers or roasters, and from 8 to 10 ducks. A coop of the same length and width, but 16 inches high, can be used for 6 to 8 geese, 5 to 6 turkeys, or 10 to 12 large hens or roasters. More birds can be placed in coops in cool weather than in warm weather. These coops also may be used on average-sized farms for "catching and culling."

The openings between the rods or slats in the tops and sides of these coops should not be large enough to allow the birds to thrust their heads out. When the dowels or rods are spaced 1 inch apart, the coop is called a "broiler coop"; when they are spaced 1½ inches apart, it is called a "chicken coop."

These coops are usually made entirely of wood, of wood with metal rods, or entirely of metal.<sup>12</sup> (Fig. 7.)

## PROCESSING POULTRY

Poultry to be processed<sup>13</sup> should be selected according to the directions outlined for live poultry on page 12. If the birds are to be finished prior to processing, the same methods may be employed as those used in finishing live poultry for market (see page 15).

Feed should be withheld, from birds to be processed, for several hours prior to killing. This is necessary in order that the crop and

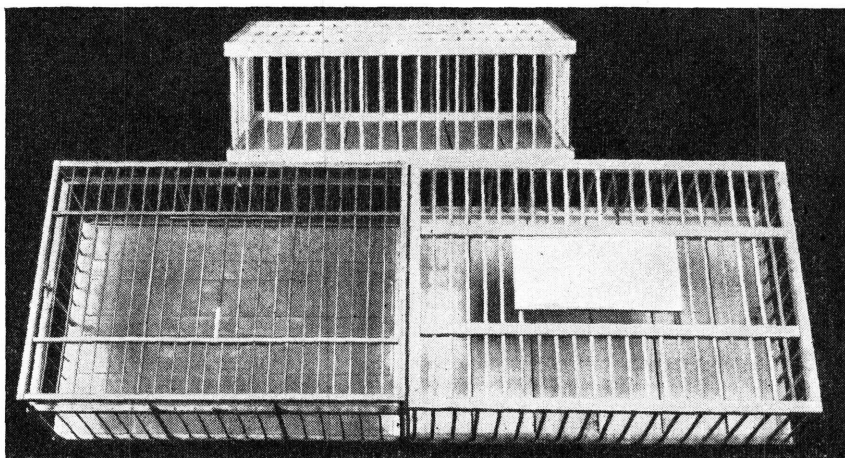
<sup>12</sup> For further information, write the Production and Marketing Administration, U. S. Department of Agriculture, Washington 25, D. C., for a copy of Agriculture Handbook No. 25, "Recommended Specifications for Standard Packs, Containers, and Packaging Materials for Poultry and Poultry Products."

<sup>13</sup> See definitions on page 11.

intestines may be sufficiently empty to prevent contamination during processing. A common practice is to withhold feed from the birds for at least 12 hours before killing. Plenty of water should be provided during this period.

### KILLING AND DRESSING

After the birds have been properly prepared for processing, every effort should be made during the processing operations to maintain high quality in the carcass. Maintenance of quality will depend on the efficiency with which the following procedures are performed and to some extent in what order they are undertaken: (Whether a farm plant is large enough to use mechanical equipment with a line operation, or whether the processing operations are done by hand, the order of procedure is fundamentally the same.)



PMA-1916

FIGURE 7.—Standard poultry coops. From left to right: All metal coop; wooden coop with metal rods; and all wood coop.

### Killing

In farm processing plants, poultry is usually killed by one of two methods—cutting the bird's throat from the outside (fig. 8), or from the inside.

Puncturing the brain is no longer practiced in connection with the killing of poultry. Cutting from the outside is the most popular method. Whether the bird's throat is cut from the outside or inside, the large vein and the cross vein, illustrated in figure 9, should both be cut.

According to one study,<sup>14</sup> cutting the bird's throat from the outside required less time and travel than did cutting from the inside (2.1 minutes and 19 feet per 10 birds by the first method in comparison with 3.8 minutes and 71 feet per 10 birds by the second method).

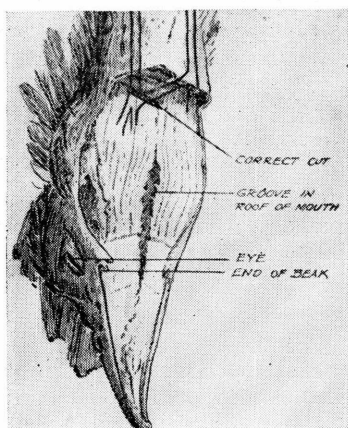
Barrels, funnels, and shackles hung from the ceiling or line and rope or cord hung from ceilings or pipes are used in killing and bleeding farm poultry (figs. 9 and 10).

<sup>14</sup> See footnote 5.





FIGURE 8.—Cutting the bird's throat from the outside. Chickens are hanging from shackles in a farm processing plant.



PMA-6839A

FIGURE 9.—Cutting the large vein and the cross vein at the same time is necessary to insure good bleeding.

Killing of poultry by cutting the birds' throats from the outside and throwing the birds into barrels is the most efficient method from the standpoint of time and travel. However, from the standpoint of quality maintenance, carcasses of birds put into funnels or hung by shackles are superior, as the muscular spasms of birds thrown into barrels cause bruises.

### Bleeding

Poultry should be thoroughly bled after killing. Blood showing around the joints, in veins on the body, and in feather follicles indicates poor bleeding. In smaller farm-processing plants, birds are usu-

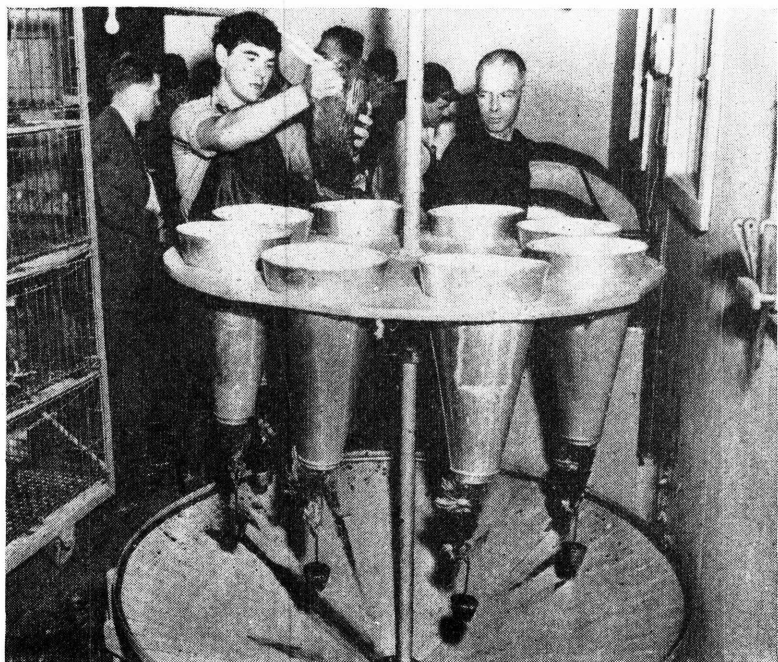


FIGURE 10.—One type of funnel arrangement for holding birds for killing. A weight attached to the bird's lower mandible insures the draining of blood into the drain pan under the birds.

ally allowed to bleed into pails or specially designed drain troughs (fig. 10) under funnels. In line operations, the birds bleed into troughs from 90 to 180 seconds as they pass along the line (fig. 8).

### Picking

There are two general methods of picking—dry and wet. Mechanical picking machines may or may not be used with either method. Wax may be used to remove the small feathers after wet picking.

*Dry picking* is little used today. By this method, the birds were killed by cutting the veins inside the throat. The brain was then



punctured and the birds picked (fig. 11) immediately without the use of water.

*Wet picking* means the picking of feathers after the birds have been immersed in, or sprayed with, hot water. Water temperatures used by poultrymen range from 128° to as high as 190° F. Chickens and turkeys are often "wet picked" after being in water at a temperature of about 130°, for a period of approximately 30 to 35 seconds for young birds and from 40 to 50 seconds for adult birds. The maximum time that birds should be held in water at 130° is probably no more than 50 to 60 seconds. At a temperature of 128°, birds can usually remain in the water about 65 to 70 seconds without serious damage.

Recently, chickens and turkeys have been wet picked after immersion in water at approximately 138°, but not over 140° F., for the same periods of time as those immersed in water at 130°. This procedure enabled the operator to pick the birds more rapidly in a shorter period of time than was possible when water was held at lower temperatures; it also offered a possibility of reducing the cost of pinning by about 75 percent. Although temperatures as high as 138° F. will remove the bloom from the birds, they are said to keep very well if they are to be marketed in a reasonable short period of time after processing, or if they are wrapped in moisture-vapor resistant paper and quick frozen.

Ducks and geese are often immersed in water at temperatures of 148° to 150° F., for 2 to 2½ minutes. Some handlers of geese wrap the birds after immersing them in water. A few handlers expose the goose carcass to steaming in a vat until the plumage is sufficiently "soft" for picking.

The time of immersion in a scalding tank depends on the temperature of the water as well as the kind, class, and age of the birds. *Experimental work on the part of the poultryman is necessary to ascertain the scalding time and temperature required to produce birds to suit consumer demands.* The above-mentioned figures will be useful as guides in conducting experiments. Since it is necessary for the hot water to reach the skin of the birds, the water in the scalding tank should be agitated during immersion or the birds should be kept in continual motion while in the water. Scalding-tank water should be kept reasonably clean, through the use of an adequate overflow and as frequent changes of water as may be necessary. This is important because some of the scald water may be absorbed internally by the bird and even the external skin, especially where torn, can become contaminated by filthy scald water.

As the temperature of the scalding water is increased, the picking time is ordinarily decreased. However, if the market prefers well-dressed birds, the use of scalding water in the lower range of temperatures just discussed and more processing time would assure the production of a high-quality bird.

In *hand picking* after immersion in the scalding tank, the birds are hung by shackles on ropes and picked immediately. Figure 11 illustrates the picking procedure. A fairly good picker can pick about 20 chickens or approximately 10 ducks in 60 minutes.

*Mechanical poultry pickers* consist primarily of a revolving drum to which rubber fingers are attached. Such pickers have proved to be

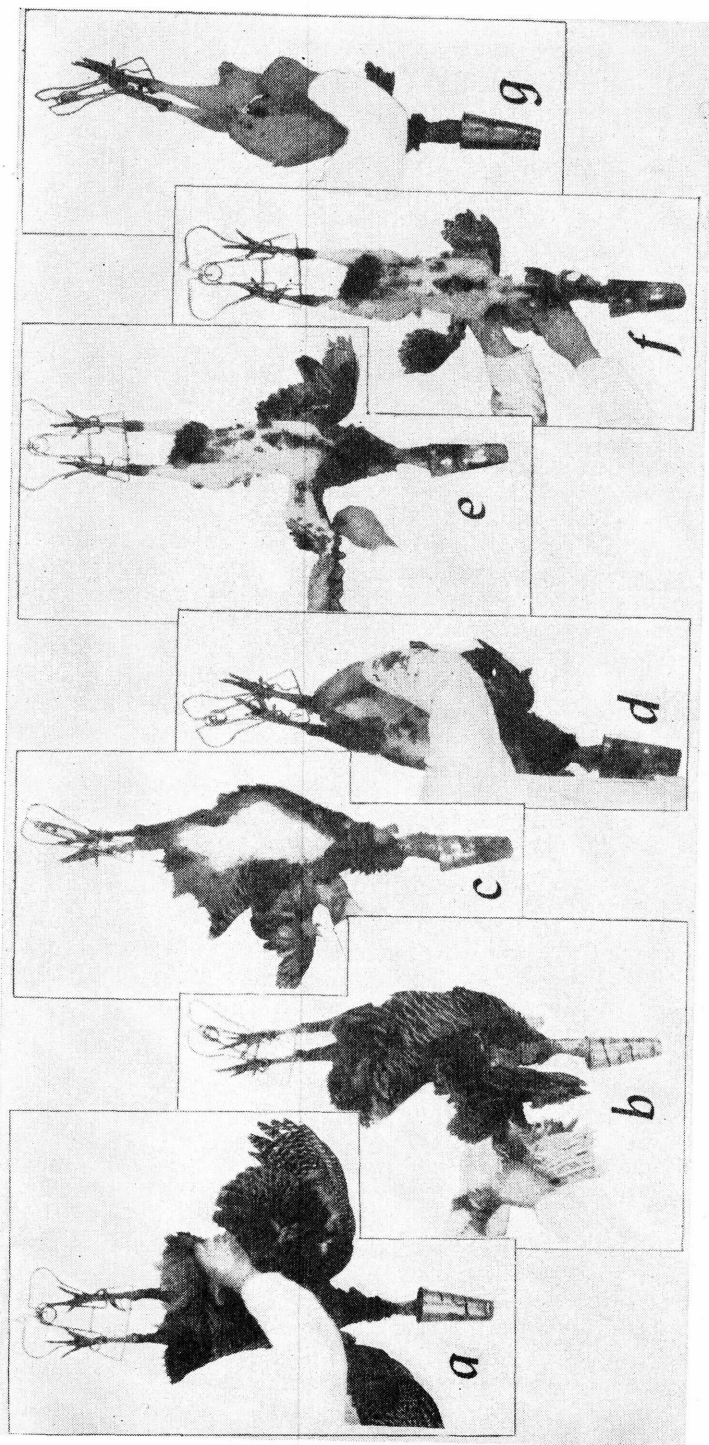


FIGURE 11.—Dry picking of birds (feathers twisted and rolled out instead of pulled) : *a*, Removing tail feathers; *b*, removing large wing feathers; *c*, removing feathers from sides; *d*, removing feathers from legs; *e*, removing feathers from back, hips, and wings (smaller feathers are picked with thumb and forefinger); *f*, removing neck feathers; *g*, removing pinfeathers.

PMA-885A-G

of value in picking chickens and turkeys. With some mechanical variations, such pickers are also useful in the picking of ducks and geese. (Fig. 12.)

With a mechanical picker, one man can pick 10 chickens in about 10 minutes. However, mechanical pickers need frequent attention from the standpoint of cleanliness, otherwise they may adulterate the entire pack by incorporating filth into the carcasses.

When *wax* is used in connection with wet picking, the large feathers in the tail and wings and the greater proportion of the body feathers are removed by hand after the birds are immersed in the scald water. After drying, the birds are dipped into a tank holding wax at a temperature not over 130° F. Two dippings are required in order to build up a heavy coating of wax. After each dipping, the bird is

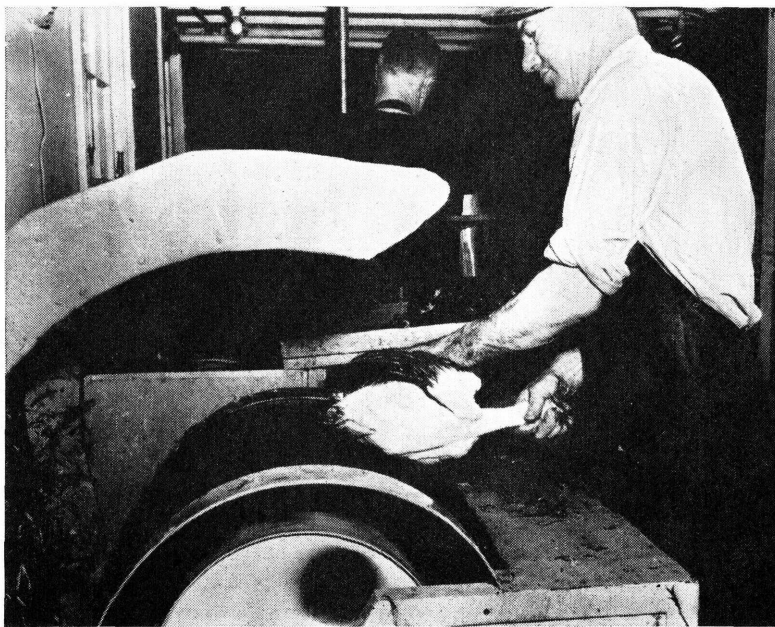


FIGURE 12.—A mechanical picker in a farm processing room.

held until the wax coat is cool and hard. The time required will depend on the room temperature and on the temperature of the bird. Birds may be dipped in cold water to speed up hardening of the wax. Wax at the right temperature for removal from the bird is tough and pliable. If the wax appears brittle, its removal has been delayed too long.

Because of the time required for the waxing operation, only large farm processors with line operations can afford to use it.

### Pinning

Pinning is best accomplished by the use of a pinning knife, illustrated in figure 11, *g*. Figure 13 shows a pinning operation in a farm processing plant.



### **Singeing**

After pinning, the birds are singed. On farms, the singeing is done by the use of bottled gas, a blow torch, an alcohol burner, or a kerosene burner. Birds are rotated as they are passed over the flame to remove the hairs that remain after pinning.

### **Cropping and Venting**

The feed is stripped from the crop by massaging the crop and the neck and forcing the feed out of the mouth; or a small incision may be made through the skin into the back of the crop and the feed forced out by pressure from the operator's hands. If the crop is slit, it should be washed carefully to remove adhering crop material from the sur-



FIGURE 13.—Pinning the birds.

rounding flesh. Stripping the crop is preferable to making an incision as it lessens the danger of spoilage and gives the bird a better appearance. Unless crops are emptied, fermentation will taint the meat and cause the skin of the crop to turn dark, and sour offensive odors will be noticed.

Vents are squeezed to force out the fecal matter which may still be in the lower intestines. This is done by pressing on the abdomen just below the vent.

### **Washing**

In the final washing, the carcass should be passed through a spray or sprays which provide an abundant supply of fresh clean water either under pressure or for scrubbing action.

(If birds are to be eviscerated or cut up warm, proceed in accordance with instructions under "Eviscerating" and "Cutting Up" on pages 27 and 32, respectively.)



## Chilling

Rapid chilling is essential in maintaining high quality of fresh-killed poultry. Chilling increases the length of time that birds may be held without off-flavors developing.

There are two general methods of chilling used on farms, *ice and water chilling* and *air chilling*. Ice chilling is most often used.

In most farm processing plants, hogsheds, milk coolers (fig. 14), or large metal or hard-surfaced tanks (fig. 15) are used for *ice and water*



FIGURE 14.—Baskets in which dressed birds are placed and transferred to a milk cooler.

*chilling*. Chilling vats or other types of containers should be *thoroughly* cleaned with hot water and soap at least once daily.

Only ice produced from potable (suitable for drinking) water should be used in vats or tanks. If ice is of block type, it should be washed by spraying with clean water before crushing. All ice-handling equipment should be washed once a day.

Enough clean crushed ice should be used with clean water in chilling tank or vat to maintain a temperature under that of 40° F., at all times during chilling. Chill tank water must be clean; filthy water will contaminate the bird internally as well as on the surface. The birds should

be clean and free from leakage of the vent when they are placed in the chill water and the chill water should be changed as often as necessary to keep it clean. Diseased or otherwise unfit birds should not be placed in the chill tanks.

Any dressed poultry carcass weighing less than 8 pounds should not be permitted to remain in the chilling vat or tank longer than 6 hours unless water is drained. Any dressed poultry carcass weighing 8 pounds or more should not be permitted to remain in chilling vat or tank longer than 8 hours unless tank is drained. A poultry carcass should not be allowed to remain in the chilling vat after the internal temperature of the carcass has been lowered to 36° F., unless water is drained. Chilling can be accomplished more quickly if the water is agitated mechanically or by air.

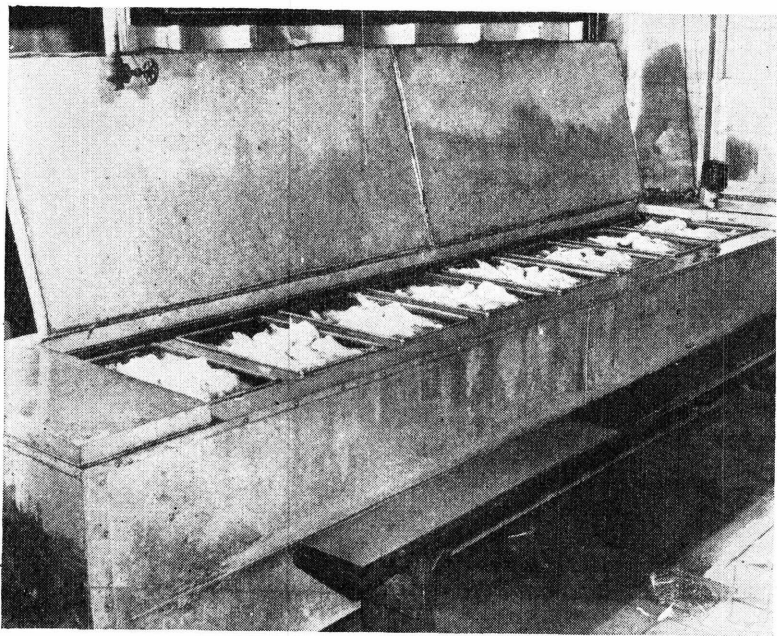


FIGURE 15.—Ducks in a cooling tank. Tanks such as this are cooled by means of coils on the inside. Water is mechanically circulated in the tank, tending to increase the rate of chilling.

When ice is not available, and during the winter months, cold well water alone is sometimes used to chill poultry. In this case, it is important to see that the water is replaced often enough to keep it clean and maintain it at as low a temperature as possible.

In *air chilling*, unless the birds are dry picked, after being passed through a spray of clean water, the birds should immediately be hung on racks and placed in a refrigerated room, or they should be placed on shelves in the cooler (fig. 16).

When racks or shelves are not used, the birds may be hung by other means, such as ropes or from shackles. Refrigerated rooms should have moderate air movement, and they should be maintained at a tem-



perature that will reduce the internal body temperature of the carcass from 36° to 40° F. within 24 hours.

During the winter months, some cellars are cool enough for chilling purposes. If electricity is available, it is good practice to place one or two fans in the cellar or cool room in order to keep the air moving.

### EVisCERATING

Poultry can be eviscerated warm, directly following the cropping, venting, and washing operations, and then cooled. However, chilling the carcass at a temperature of 40° F. or less will make the job of



FIGURE 16.—A walk-in cooler in a farm processing plant. Birds are placed on shelves or hung on racks.

eviscerating<sup>15</sup> easier. The grease in the fat will not smear over the skin and the flesh will be firmer if eviscerating is performed after cooling. If the birds are to be quick frozen or delivered to customers without holding for more than 1 to 2 days, the usual practice is to eviscerate as quickly as the birds become thoroughly chilled. In a small farm processing plant, a stainless steel drawing table is desirable for eviscerating (fig. 17).

In some large farm processing plants, the eviscerating is done on an overhead conveyor line where each worker does a specific job on each bird. This practice results in a clean product because the bird is suspended from a shackle during the entire operation.

<sup>15</sup> See definitions on page II.

There are several methods of eviscerating. The method usually depends on the kind and class<sup>16</sup> of poultry to be eviscerated and on the form (whole, halves, or cut-up) in which the bird is to be marketed.

### Whole Birds

In one method of eviscerating, when the bird is to be left whole, the steps are as follows:

- (1) The head is cut off with a knife, cleaver, or shears (fig. 18, *a*).
- (2) If the bird is to be trussed, the skin on the back of the neck is cut, from the point where the head was severed to a point in line with the base of the neck (fig. 18, *b*), and the skin is then pulled down to the shoulder.



FIGURE 17.—Eviscerating chickens in a small farm processing plant.

- (3) The crop and windpipe are removed by pulling them away from the neck skin. The gullet is cut off at the point where it enters the body (fig. 18, *c*). The fingers are then inserted in the neck opening and the heart and lungs loosened.

- (4) The neck is cut from the body between the wing joints (fig. 18, *d*). If a knife is used, the neck muscle can be cut and the neck twisted off.

- (5) Then, the legs are removed. If the tendons are to be removed (more often done with turkeys and heavier classes of chickens) they should be pulled prior to cutting off the legs. The cut on the legs should be made at the large joint so that some of the leg scale is left. This prevents the meat from pulling away from the bone while cooking (fig. 19, *a*).

<sup>16</sup> See definitions on page II.



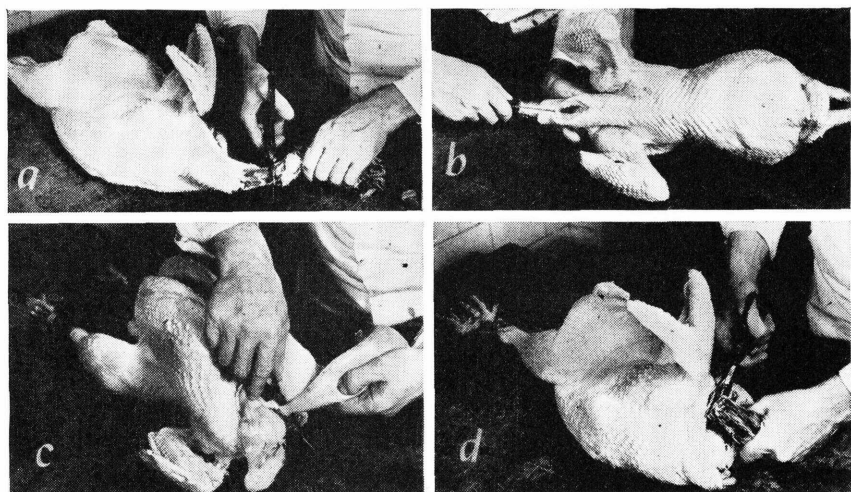


FIGURE 18.—*a*, Removing the head; *b*, slitting the skin down the back of the neck; *c*, removing crop and windpipe; *d*, removing neck.

(6) The oil sac, located on the back of the bird at the base of the tail, is removed by cutting under the sac to the backbone and up toward the tail (fig. 19, *b*).

(7) The entrails are removed from the bird. There are two types of cuts, vertical and transverse (horizontal), to make an opening into the body cavity. To effect a vertical cut, an incision is made below the end of the breastbone (keel) down to and around the vent (fig. 20, *a*). The gizzard is located through the opening and drawn out together with the liver, heart, and intestinal tract. The lungs and kidneys are then removed.

The transverse cut is made by cutting across the body between the end of the keel and the vent. Then a cut is made around the vent (fig. 20, *b*). The entrails (viscera) are removed through the transverse cut. This type of cut is used when birds are to be trussed.

(8) The gizzard and liver are removed from the entrails. The gizzard is split, lengthwise, through the thick muscle and the contents peeled out.

To remove the gall bladder without breaking it, grasp the gall bladder, between the thumb and forefinger of one hand, close to the

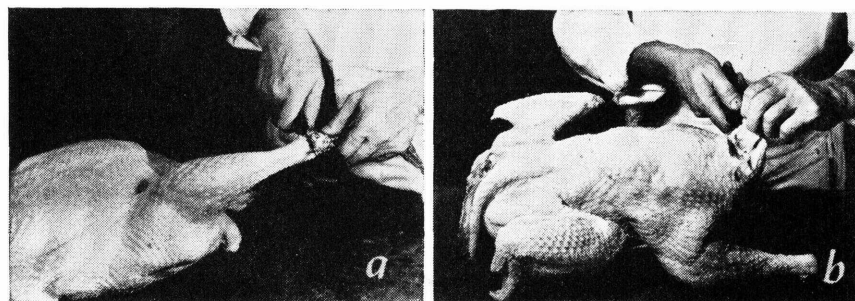


FIGURE 19.—*a*, Cutting off the leg; *b*, cutting out the oil sac.

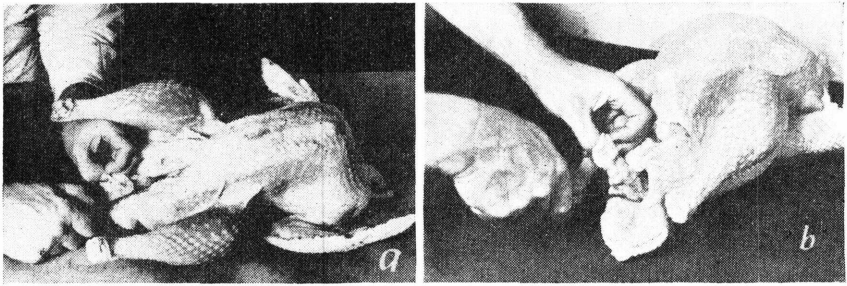


FIGURE 20.—*a*, Vertical cut to remove viscera; *b*, transverse cut to remove viscera.

liver. Hold the liver with the other hand and pull the gall bladder away.

(9) The heart is cut open and washed to free it of blood.

(10) The giblets (gizzard, liver, and heart) are washed and wrapped separately. Then the carcass is ready for trussing.

(11) The first step in trussing is to draw the neck skin as far over the back as possible and lock the wings to hold it in place (fig. 21). If a transverse cut has been used to make an opening into the body cavity, the legs of the bird may be forced through the openings (fig. 22, *a*). If a vertical cut has been used, the legs must be tied down to the tail end with white cotton cord, or some similar material. The bird is now ready for cooking or for wrapping and sale.

#### Broilers and Fryers

Broilers and fryers are generally eviscerated in the same manner, except that fryers are cut into more pieces, as follows:

(1) The head, legs, and oil sac are removed in the usual manner (figs. 18, *a*, and 19). The neck is left attached to the body.

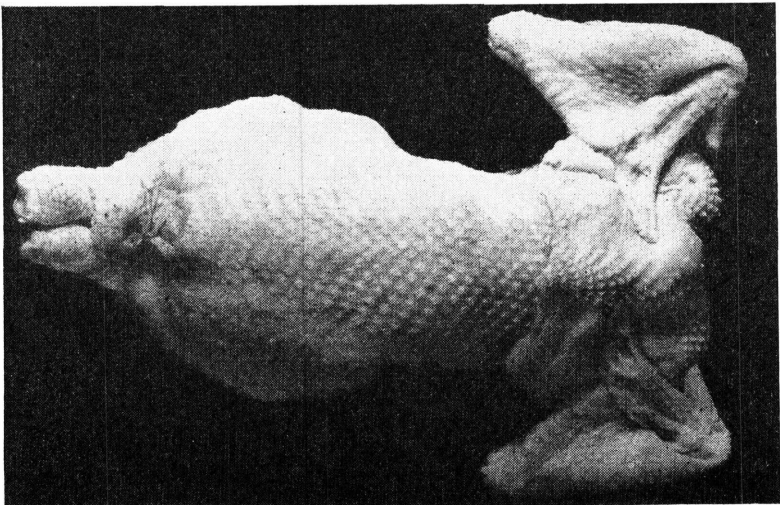


FIGURE 21.—Neck skin held in place by wings.



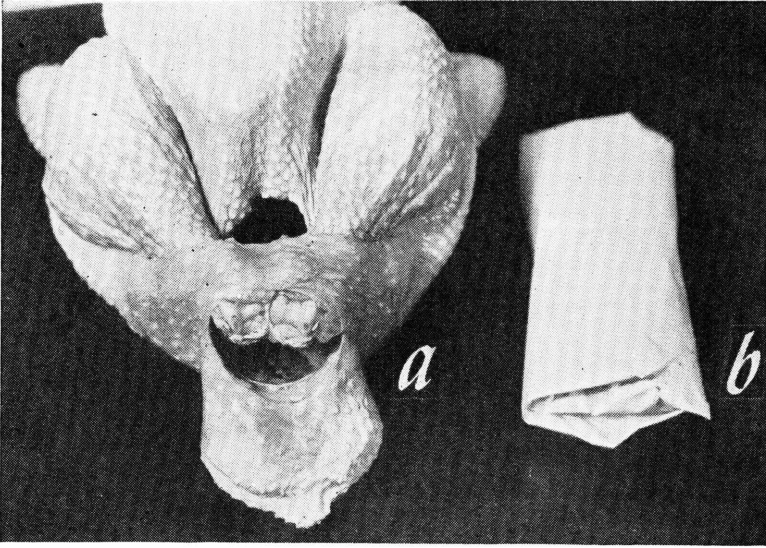


FIGURE 22.—*a*, Legs of trussed bird held in place by skin; *b*, wrapped giblets.

(2) The bird is then split down the back by making a diagonal cut from the neck and wing on the back to the lower side of the tail (fig. 23).

Another procedure is to cut down one side of the backbone, encircle the vent, and continue the cut up the other side of the backbone. The backbone and neck may then be stripped out.

(3) The carcass is next spread apart and the internal organs removed (fig. 24).

(4) The carcass is washed.

(5) The giblets are then washed and wrapped separately. Broilers may be halved, or cut into four or more pieces.

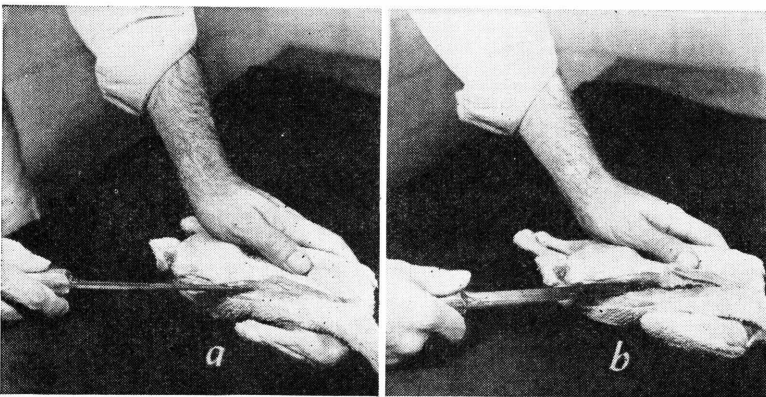


FIGURE 23.—Cutting open the body cavity of a broiler or fryer: *a*, The incision; *b*, cutting through the back.

### Hens for Stewing

Hens for stewing are generally disjointed, which permits different methods of drawing than those used for roasters, broilers, or fryers. After the head and shanks are removed, proceed, before drawing, to cut away the pieces from the main carcass. Next, make a light transverse cut on both sides of the body below the breast, cutting along the edge of the ribs, where the back is broken and the bird cut into two parts. Cut the back away from the entrails, leaving the latter in one mass.

### Other Kinds of Poultry

The usual method of eviscerating turkeys is similar to that for chickens. As ducks and geese are usually roasted, the method of eviscerating is similar to that described for whole birds (p. 28).

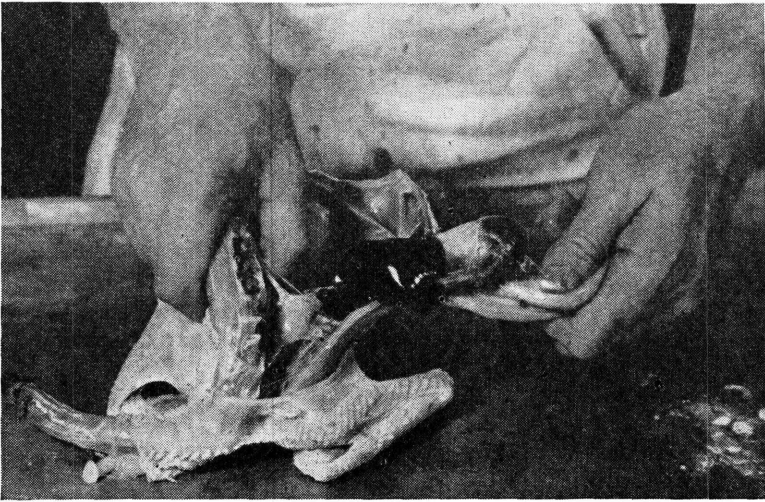


FIGURE 24.—Removing the viscera from the opening in the back of a broiler.

### CUTTING UP

Many homemakers prefer to buy poultry ready for the pan, similar to the way they buy beef, pork, and lamb. They often prefer to buy the pieces particularly liked by the family instead of having to buy an entire chicken. Food chains and other retail stores that sell cut-up chickens, in the larger cities, report that the cutting up of broilers and fryers has increased the sales of these classes of poultry.

A completely cut-up bird consists of breast (may be cut into two or three pieces), two wings, two legs (thighs and drumsticks may be separated), back (whole or cut into two pieces), and neck, plus gizzard, heart, and liver. Slightly bruised birds and those with minor imperfections can often be sold most advantageously as cut-up chicken after the bruised parts are cut out.



## Chickens

After killing, dressing, removing the feet, head, neck, crop, windpipe, and oil sac in the usual way, the birds are ready to be cut up. Figure 25 illustrates the steps used in one method (sometimes called "fricassee cutting") of cutting up a chicken. After birds have been cut up, the pieces should be washed in clear cold water. If birds are to be sold fresh, they should be kept thoroughly chilled before selling.

If the bird is to be sold by pieces (as legs only or wings only), the

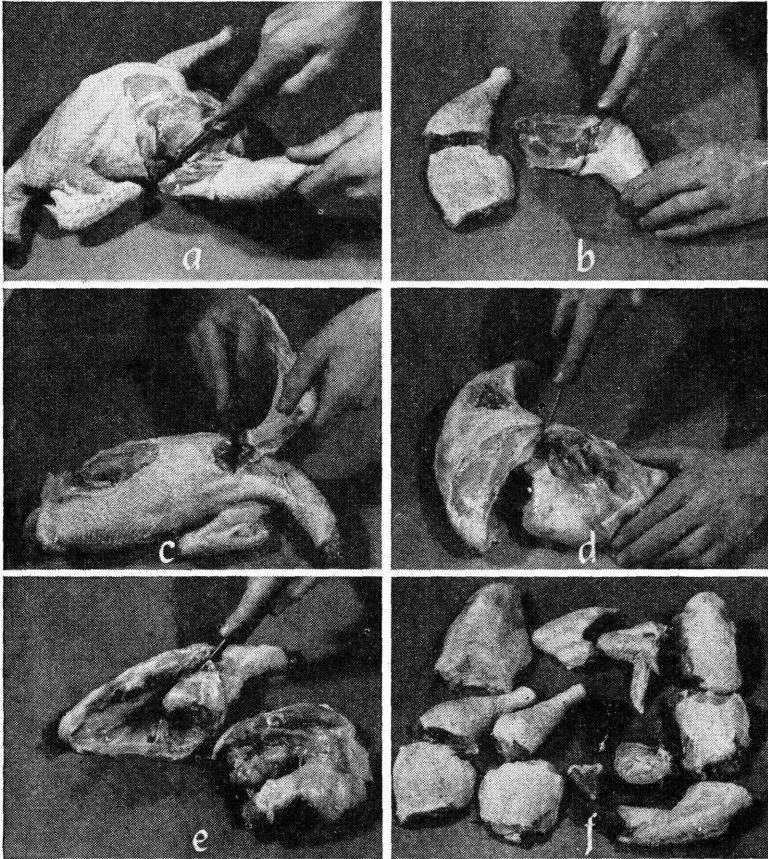


FIGURE 25.—Cutting up a chicken: *a*, Removing legs at thighs; *b*, cutting legs in two pieces at second joint; *c*, removing wings; *d*, cutting body in half; *e*, splitting upper half of the breast; *f*, chicken completely cut up into pieces.

usual commercial practice is to remove the wing so that all of the muscle from the base of the wing stays on the breast. The thigh is removed so as to include as much as possible of the small muscle (the so-called "oyster") from the back. The breast is separated from the back by cutting from the tail down one side of the backbone to the neck, leaving the skin intact on the neck. The same operation is repeated on the other side of the backbone. Back and neck are left in one piece.

## Turkeys

Half turkeys and quarter "turkey roasts" have a definite appeal to homemakers. Other popular parts are disjointed pieces of "cut-ups," cross-cut steaks, and boneless steaks. Different methods of cutting up have been developed largely as a means to assist in the sale of large turkeys. Since the introduction of the big meat-type birds, turkey producers have been raising heavier birds. At the same time, American families have become smaller and many household ovens are too small to roast a large turkey. No doubt families will buy



PMA-17940

FIGURE 26.—A large frozen turkey being cut in half with a band saw. A meat saw may be used for this purpose. Birds can be cut before being frozen but this is not easy.

turkey meat more often if it is available in pieces throughout the year. (Figs. 26 and 28.)

To prepare quartered turkey, cut or saw the half bird into two quarters. This procedure results in excellent roasting-size cuts, and offers the consumer either dark or light meat in smaller quantities than those available from a half turkey or a whole turkey. (Figs. 27 and 28.)

Disjointed turkey is prepared about the same as disjointed fryer chickens (fig. 25) except that the breast may be halved with or without the wing attached. The leg may be left whole with "oyster" attached, or the thigh and drumstick may be separated. (Fig. 28.)



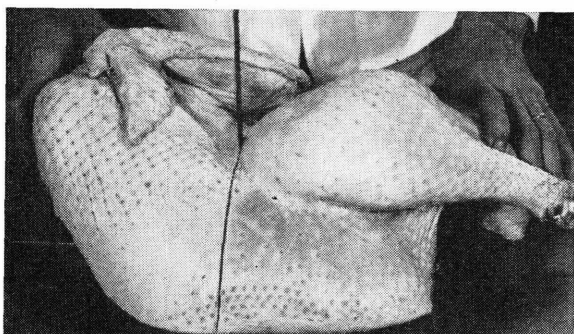
One of the latest developments in merchandising turkeys is cross-cut steaks. (Fig. 29.)

Further information on crosscut turkey steaks and cutting up of turkeys, in general, may be obtained from Farmers' Bulletin No. 2011, United States Department of Agriculture, Washington 25, D. C.

### CANNING AND SMOKING

There is a limited market for canned poultry. Some poultry producers find that canning provides a profitable method of disposing of birds showing slight defects or older birds. A publication of the United States Department of Agriculture, AWI-110, entitled "Home Canning of Meat," contains detailed directions for canning poultry, with or without bone, by both the "hot pack" and "raw pack" methods. A pressure cooker should be used in canning poultry.

Smoked poultry, particularly turkey, is considered a delicacy. Many of the State colleges of agriculture have issued educational publications on smoking poultry. Since some methods used on farms for smoking poultry are not considered desirable, write the Food and Drug Administration, Federal Security Agency, Washington 25, D. C., for recommendations.



PMA-1794

FIGURE 27.—Half a bird being cut into two quarters. The front quarter is largely white meat. The rear quarter contains mostly dark meat.

### RECOMMENDATIONS FOR FARM PROCESSING PLANTS

Some States and local municipalities have laws and regulations which require a license or permit to engage in the business of processing poultry. Such laws and regulations are primarily designed to establish and maintain certain sanitary standards with regard to construction, equipment, and operating practices. For information pertaining to poultry-processing plants, contact State departments of agriculture or health and the local health or sanitary authorities.

Poultry producers who have their dressed or ready-to-cook (eviscerated) poultry Federal or Federal-State graded or inspected, must comply with the United States Department of Agriculture's voluntary regulations for such time as they sell their poultry under Federal grade identification or inspection mark. Although producers who process poultry do not have to comply with the voluntary regulations



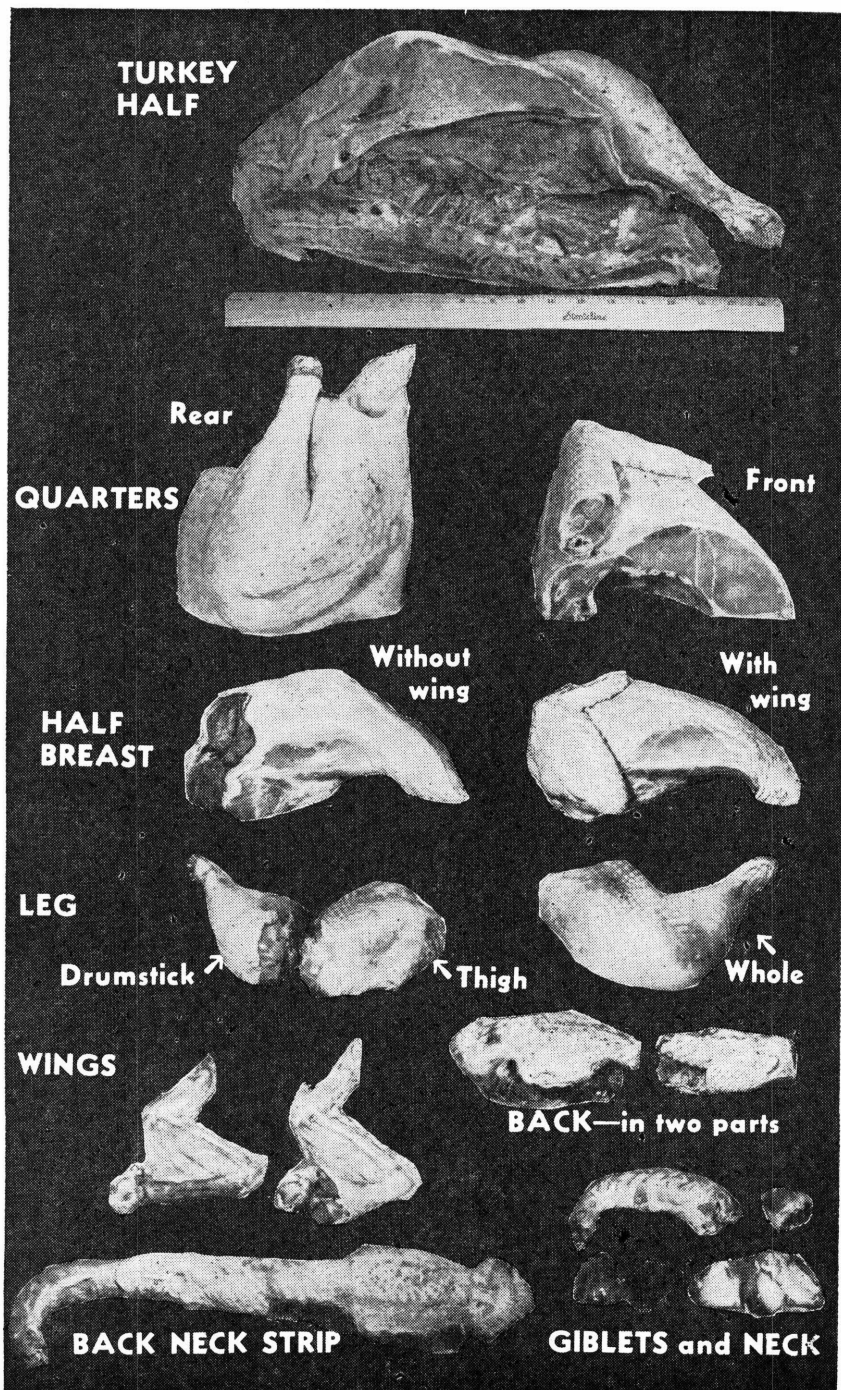
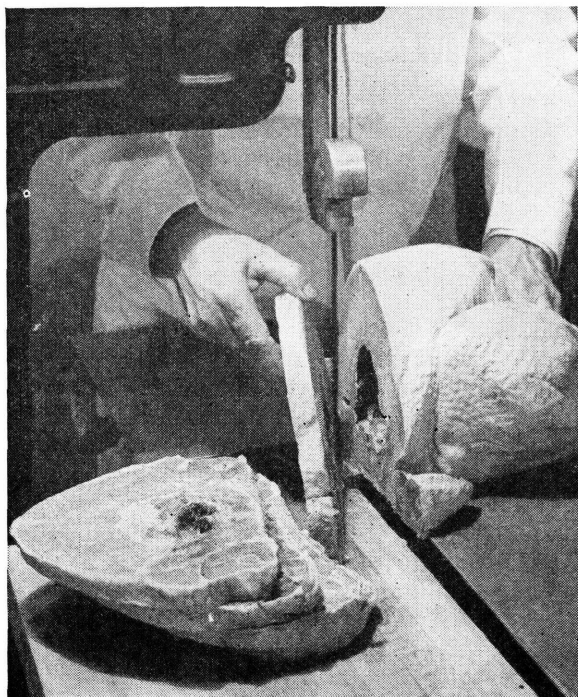


FIGURE 28.—Different cut-up turkey parts.



unless they want to participate in one or more of the programs offered, the use of the included sanitary requirements as a goal or standard at which the producer should aim is strongly recommended. As copies of these voluntary regulations<sup>17</sup> are available upon written request, the recommendations for building or remodeling farm processing plants given below include only the principles involved, except when certain information is not supplied by the regulations.

These recommendations apply to large farm processing plants, where automatic equipment and conveyor lines are used, as well as to small farm processing operations carried on by hand.<sup>18</sup>



PMA-17943

**FIGURE 29.**—A large frozen turkey being sawed into crosscut steaks about three-fourths of an inch thick.

### **Location of Processing Plants**

Poultry producers who contemplate the construction of a building in which a processing plant is to be located should keep in mind the following considerations: (1) The side of the building, where live birds are brought into the plant and processed birds are removed, should be accessible by truck or automobile. (2) The building should be located as near to the source of live poultry as possible unless processed

<sup>17</sup> See footnote 11.

<sup>18</sup> The Farm Credit Administration, U. S. Department of Agriculture, Washington 25, D. C., has recently issued Miscellaneous Report 147, entitled "Plans and Operations of Farm and Small Commercial Poultry Dressing Plants," by Amacker and Scanlan. Copies may be obtained free upon request.

poultry is to be sold at the farm. If a salesroom is to be a part of the building, the building should be located near the road. If a producer sells his processed birds at a roadside stand and wants to take advantage of the cold-storage room or freezer located in the plant, the plant should be located near the stand. (3) The processing should be done on the ground floor. This makes the bringing in of the live birds and removal of the processed birds more efficient than otherwise. (4) If the plant is located near the road, for reasons given in (2), space should be available for visitors to park. (5) If sales are to be made at the farm, the plant should be located in as attractive surroundings as possible. The first three considerations were emphasized in a recent study.<sup>19</sup>

### **Buildings and Plant Facilities**

The building should be of sound construction and kept in good repair. It should be constructed so as to prevent the entrance or the harboring of rodents. The doors, windows, and other outside openings should be protected against the entrance of flies and other insects by properly fitted screens and other suitable devices. When the volume of processed poultry is sufficient to warrant the cost, walk-in refrigerators may be provided.

The floors, walls, ceilings, partitions, posts, doors, and other parts of any compartments should be constructed of such materials and with such a finish that they can be readily and thoroughly cleaned. This usually means materials that have a hard, smooth finish. The floors where the operations of killing, ice-cooling, ice-packing, and eviscerating are conducted should be graded to permit runoff of the water. The pitch should be about one-fourth of an inch per foot to drains. The floor area should be large enough to permit freedom of movement in the plant and between equipment, with a minimum of unused space, and to provide for all operations to be conducted at the same time.

The drainage and plumbing systems should permit the quick runoff of all water from the building as well as surface water around the plant and on the premises. Floor drains should be equipped with traps. Drainage should pass through a septic tank or be disposed of by other sanitary methods.

The water supply should be ample, clean, and potable. It should be protected from contamination and pollution. Hot water at a temperature of not less than 180° F. should be available for sanitation purposes.

Ample, well-distributed natural or artificial light, or both, should be provided. There should be sufficient ventilation to insure sanitary conditions. As a guide to proper lighting, there should be about 10 foot candles of light intensity on all working surfaces. In other places, 4 foot candles of light intensity (measured 30 inches from the floor) should be provided.

Properly located facilities for cleaning utensils and washing of hands should be furnished. Whether in the plant or elsewhere, sanitary lavatory accommodations should be provided.

---

<sup>19</sup> See footnote 5.

## Equipment and Utensils

Equipment and utensils should be of such material and construction that will permit thorough cleaning. Insofar as practicable, they should be made of metal or other impervious material. Equipment and utensils include barrels for refuse, receptacles used for entrails and other waste, receptacles used for holding or handling diseased carcasses, eviscerating and cutting-up tables, and chilling vats. Batteries, scalding tanks, and cooling racks, when used, should be made of metal.

Equipment and utensils used for processing poultry should not be used for other purposes.

### Floor Plans

After a producer has decided on a building and equipment for processing poultry, a floor plan should be made. This plan should show the location of all equipment in relation to the building facilities, such

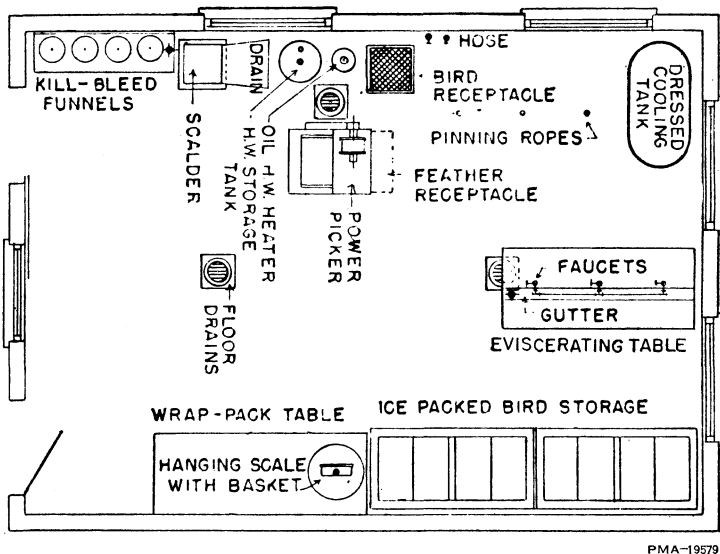


FIGURE 30.—Suggested floor plan for a small farm processing plant employing two to five workers.

as doors and windows. The importance of efficient arrangement of equipment increases as the number of birds processed is increased.

Figure 30 shows a floor plan for a small farm processing plant in which 3 workers can dress about 120 birds per hour; after dressing, 3 workers can eviscerate about 60 birds per hour.

Figure 31 shows a floor plan suitable for a farm processing plant with refrigerated storage and salesroom. About 200 birds can be dressed per hour by 5 workers, and approximately 100 dressed birds can be eviscerated per hour by 5 workers. As this plant would be equipped for freezing, considerable quantities of poultry could be processed and held over for a period of time.

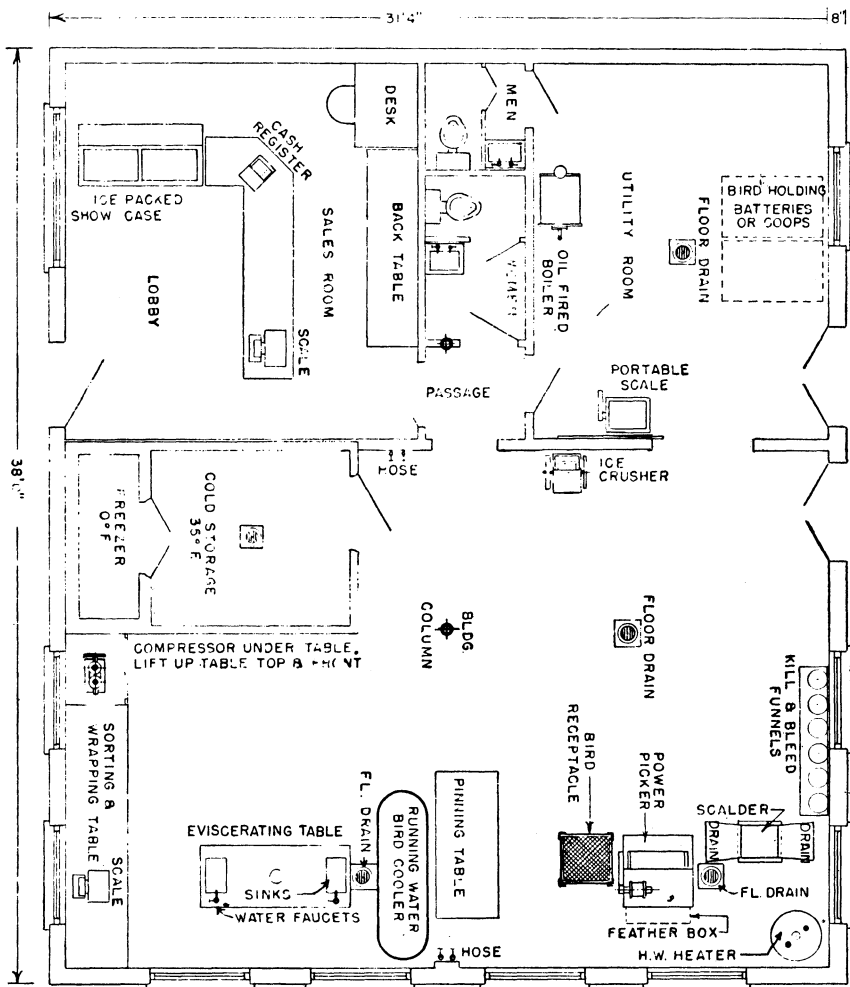


FIGURE 31.—Suggested floor plan for a farm processing plant with cold storage and salesrooms. From five to nine workers can be efficiently employed.

Poultry-processing-equipment manufacturers have developed complete floor plans for large plants having automatic equipment and conveyor lines. Some of these plans are suitable for large farm processing plants in which large volumes of poultry are processed.

## GRADING AND INSPECTION OF PROCESSED POULTRY

Although grading and inspection services are carried on in conjunction with processing,<sup>20</sup> they are not processing operations. For that reason, they are considered separately in this publication.

The information in the first two paragraphs, under the heading "Preparing live poultry for market," on page 12, which pertains to

<sup>20</sup> See definitions on p. II.



the quality and uniformity of a lot of birds, is also applicable to processed poultry. Those paragraphs should be read in connection with the following sections.

## **PRODUCER GRADING AND INSPECTION**

For the purposes of the poultry producer, grading means the classifying of poultry by class,<sup>20</sup> quality, and weight. Inspection refers to an examination of birds for indications of disease or other conditions which may make the birds unfit for human consumption. Actually, such grading and inspection services are a part of the same operation. As a producer examines his birds while grading, he should also look for abnormalities that may be present. If a good job of selecting the live birds for processing (the same principles are involved as those used in selecting live poultry for market, p. 12) has been done, the grading and inspection of the processed birds will be easier.

Although producer grading and inspection should be a continuous procedure during dressing and eviscerating, the final grading and inspection of the dressed birds should take place after the dressing operation, as the birds are being packaged for shipment or direct sale to the consumer. The inspection of dressed poultry that is being eviscerated should take place at the time the abdominal cavity of each bird is opened and the visceral organs removed. The final grading of ready-to-cook poultry (eviscerated) should be undertaken after the eviscerating operation as the whole birds are being packaged, or before cutting up or disjointing the whole birds. The United States standards of quality were designed for whole birds. These standards cannot be used as a basis for grading after the birds are cut up or disjointed.

Summaries of the United States specifications for standards of quality for chickens and turkeys are shown on pages 44 and 46. These summaries may be used as a basis for grading, whether a producer wants to use the same grade designations (A, B, or C) or whether he wants to establish his own grade designations (such as "blue ribbon" for A or top quality, or "red ribbon" for B or second quality birds). The birds shown in figure 32 may be used for making visual comparisons in grading. Although turkeys are used for these illustrations, the same relative comparisons can be made for other kinds and classes of poultry.

As a basis for grading by weight, tables I, II, III, or IV in the "United States Specifications for Standards of Quality for Individual Carcasses of Dressed and Ready-to-Cook Poultry" may be used. More complete information on grading turkeys may be found in Bulletin No. 1815, entitled "Grading Dressed Turkeys." A copy of this publication may be obtained from Production and Marketing Administration, United States Department of Agriculture, Washington 25, D. C.

United States standards are strongly recommended for adoption by not only poultry producers but the entire poultry industry. Such standards, used throughout the Nation, would serve the following purposes: (1) Set up a common language of quality or specification. (2) Remove the need for personal inspection of products by sellers.

buyers, and lenders of money. (3) Provide a comparable basis for the quotation of market prices. (4) Provide a buying guide for consumers or purchasers. (5) Aid the seller (other things being equal) in obtaining market prices. (6) Improve marketing conditions in many other ways.

As grading and inspection work progresses, birds showing the following external characteristics, should be removed and neither sold for human consumption nor fed to animals: Extreme emaciation; obvious evidence of disease; abdominal accumulations; and evidence of anemia or bruises in excess of that permitted in C-quality birds (pages 44 and 46). Birds that are emaciated are very thin or "wasted away." The skin and flesh of birds showing evidence of disease are

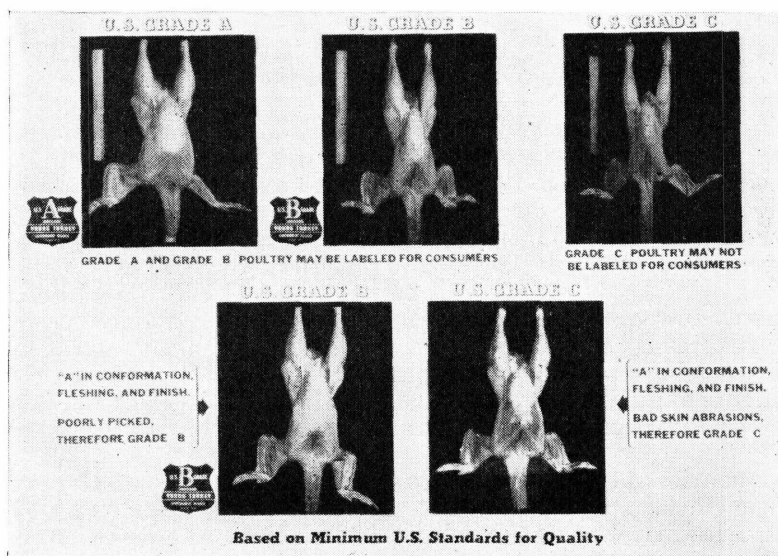


FIGURE 32.—Dressed hen turkeys to illustrate United States grades which are based on the United States standards of quality.

darker than normal, the combs and wattles (dressed birds) may be shrunken or engorged with blood and have a bright-red or purplish color, the skin may appear thinner, and both the skin and flesh may appear doughy. Anemic birds are identified by abnormally pale carcasses. Abdominal accumulations refer to body cavities that are filled with fluid or cheeselike substances. When these accumulations are present, they can sometimes be determined by feeling the abdomen. The abdomen will likely be enlarged. If fluid is present in the abdomen, it will move around under pressure from the fingers.

Many diseases of poultry are chronic and develop slowly. A great number of abnormal conditions appear on the internal organs of birds, especially older birds. The lesions found in the abdominal organs, caused by tuberculosis, blackhead, ruptured ova, Newcastle disease, pullorum disease, visceral lymphomatosis, and many other conditions, will be found in birds which appear to be normal. For this reason, the internal surfaces of the abdominal cavities as well as the visceral organs of birds being eviscerated should be examined.

Internal evidence of diseases may appear as bloody spots on or under the surfaces of such organs as the liver, spleen, heart, lungs, kidneys, ovary, and intestines. They may appear as yellowish deposits within the heart sac or air sacs, or even within the substance of the organs. The organs may be smaller or shrunken, pale, dark or discolored, with greenish, brownish, or bluish shades of color. There may be white or gray spots, cream-colored growths, and numerous unusual shaped, shrunken, or swollen areas. The organs may be firmer, softer, or more mushy than normal, and they may contain firm, hard nodules (lumps, knots); or they may contain small sacs filled with fluid.

Any edible organ or organs of birds in which the abnormalities just discussed or other abnormalities appear should be removed and not sold, consumed at home, nor fed to animals. If these abnormalities appear to affect not only the organs but the carcass itself, the bird and organs so affected should be discarded and not sold, consumed at home, nor fed to animals, unless an expert on poultry diseases has made an examination and determined that the abnormalities would not endanger the health of humans or animals.

Under certain conditions, processed poultry held for even short periods of time may show evidences of decomposition. Any birds showing the following characteristics should be destroyed, as they are not fit for consumption and may be classed as adulterated food under the Federal Food, Drug, and Cosmetic Act: A slippery or slimy condition of the skin especially between the wing and the body and neck; a greenish cast over the back and between the thigh and the ribs (this color should not be confused with the green or blue-green color resulting from sunburn or pigmentation that may show through the skin); mold growths anywhere on the bird, especially between the legs or on the head and around the vent; a putrid off-odor; or a green vent or green area surrounding the vent.

For further information on poultry diseases, contact the nearest State college of veterinary medicine or the local veterinarian.

## FEDERAL-STATE GRADING AND INSPECTION

The Voluntary Poultry Regulations <sup>21</sup> of the United States Department of Agriculture offer several grading and inspection programs and services. Although they are used mostly by commercial operators, some producers having large processing operations are now operating under one or more of these programs. Poultry producers who use any of the following kinds of services must adhere to the above-mentioned regulations, as long as they are operating under them:

(1) *Grading of dressed poultry.* Under this program, Federal or Federal-State graders do the grading. Only carcasses of A quality or B quality may be individually identified by a Federal grade mark, illustrated in figure 32. The containers of such poultry may also be identified with a grade mark. If dressed poultry is of C quality, only the bulk containers may be so identified, even though the grading may have been performed on an individual bird basis.

(2) *Grading of ready-to-cook poultry.* Under this program, the birds must be inspected for wholesomeness and condition by a Federal

<sup>21</sup> See footnote 11.

## UNITED STATES DEPARTMENT OF AGRICULTURE, PRODUCTION AND MARKETING ADMINISTRATION

*Summary of specifications for standards of quality for individual carcasses of dressed and ready-to-cook chickens\**

(Minimum requirements and maximum defects permitted)

Factor	A quality		B quality		C quality	
	Breast and legs	Elsewhere	Breast and legs	Elsewhere	Breast and legs	Elsewhere
Conformation	Normal		Practically normal		Abnormal.	
Breastbone	Slight curve, $\frac{1}{8}$ " dent		Dented, curved, slightly crooked		} Seriously crooked. If fairly well fleshed.	
Back	Normal (except slight curve)		Moderately crooked			
Legs and wings	Normal		Moderately misshapen		Misshapen	
Fleshing	Well fleshed, moderately long and broad breast.		Fairly well fleshed on breast and legs.		Poorly fleshed.	
Breastbone	Not prominent		Not prominent		} May be prominent. Lacking in fat covering over all parts of carcass.	
Fat covering	Well covered—some fat under skin over entire carcass. Broilers or fryers only moderate covering.		Sufficient fat on breast and legs to prevent a distinct appearance of flesh through skin.			
Pinfeathers: Dressed:						
Pins and hair	Practically free.	Practically free.	Relatively few.	Slight scattering.	Numerous	Numerous.
Ready-to-cook:	Practically free.	Practically free.	Few scattered	Few scattered	Scattering	Scattering.
Protruding pins and hair.	Free	Free	Free	Free	Free	Free.
Cuts and tears <sup>1</sup>	Free	1½ inches	1½ inches	3 inches	No limit.	No limit.
Disjointed bones	1. None (except one nonprotruding if broiler or fryer).		2. Nonprotruding		No limit.	No limit.
Broken bones			1 Nonprotruding		No limit.	No limit.

Discolorations: <sup>2</sup>					
Flesh bruises.....	0 inch.....	1/2 inch.....	1/2 inch.....	1/2 inch.....	No limit. <sup>3</sup>
Skin bruises.....	1/2 inch.....	3/4 inch.....	3/4 inch.....	1 1/2 inches.....	No limit. <sup>3</sup>
All discolorations.....	1 inch.....	1 1/2 inches.....	1 1/2 inches.....	3 inches.....	No limit. <sup>3</sup>
Freezer burn.....	Few small (1/8 inch diameter) pockmarks.		Moderate-dried areas not in excess of 1/2 inch in diameter.		Numerous pockmarks and large dried areas.

\*The quality designations specified herein are not applicable to birds possessing any of the following conditions: Dirty or bloody head or carcass, dirty feet or vent, fan feathers or neck feathers or garter feathers, or feed in the crop.

<sup>1</sup> Total aggregate length of all cuts and tears including incision for removal of the crop or its contents.

<sup>2</sup> Maximum diameter of aggregate areas of all flesh bruises, skin bruises, and discolorations.

<sup>3</sup> No limit on size and number of areas of discoloration and flesh bruises if such areas do not render any part of the carcass unfit for food.

STANDARDS EFFECTIVE JANUARY 1, 1950

## UNITED STATES DEPARTMENT OF AGRICULTURE, PRODUCTION AND MARKETING ADMINISTRATION

*Summary of specifications for standards of quality for individual carcasses of dressed and ready-to cook turkeys\**

(Minimum requirements and maximum defects permitted)

Factor	A quality		B quality		C quality	
	Breast and legs	Elsewhere	Breast and legs	Elsewhere	Breast and legs	Elsewhere
Conformation	Normal	Normal	Practically normal	Practically normal	Abnormal.	Abnormal.
Breastbone	Slight curve, 1/4-inch dent	Slight curve, 1/4-inch dent	Dented, curved, slightly crooked.	Dented, curved, slightly crooked.	Seriously crooked.	Seriously crooked.
Back	Normal (except slight curve)	Normal (except slight curve)	Moderately crooked	Moderately crooked	fleshed.	fleshed.
Legs and wings	Normal	Normal	Moderately misshapen	Moderately misshapen	Misshapen.	Misshapen.
Fleshing	Well fleshed, moderately long and broad breast.	Well fleshed, moderately long and broad breast.	Fairly well fleshed on breast and legs.	Fairly well fleshed on breast and legs.	Poorly fleshed.	Poorly fleshed.
Breastbone	Not prominent.	Not prominent.	Not prominent.	Not prominent.	May be prominent.	May be prominent.
Pouchiness	Slight.	Slight.	Definite.	Definite.	Extended.	Extended.
Fat covering	Well covered—some fat under skin over entire carcass.	Well covered—some fat under skin over entire carcass.	Sufficient fat on breast and legs to prevent a distinct appearance of flesh through skin.	Sufficient fat on breast and legs to prevent a distinct appearance of flesh through skin.	Lacking in fat covering over all parts of carcass.	Lacking in fat covering over all parts of carcass.
Pinfeathers: Dressed: Pins and hair	Practically free	Practically free	Practically free	Practically free	Numerous	Numerous.
Ready-to-cook: Nonprotruding pins— Protruding pins and hair.	Practically free	Practically free	Relatively few	Slight scattering.	Scattering	Scattering.
Cuts and tears <sup>1</sup>	Free	Free	Few scattered	Few scattered	Free	Free.
	Free	3-inch	3-inch	6-inch	No limit.	No limit.
Disjointed bones	1	1	2	2	No limit.	No limit.
Broken bones	None	None	1 nonprotruding	1 nonprotruding	No limit.	No limit.

Discolorations: <sup>2</sup>	0-----	1-inch-----	1-inch-----	3-inch-----	No limit. <sup>3</sup>
Flesh bruises-----	3/4-inch-----	1 1/4-inch-----	1 1/2-inch-----	3-inch-----	No limit. <sup>3</sup>
Skin bruises-----	2-inch-----	3-inch-----	3-inch-----	6-inch-----	No limit. <sup>3</sup>
All discolorations-----					
Freezer burn-----	Few small (1/8-inch diameter) pockmarks.	Moderate-dried areas not in excess of 1/2-inch in diameter.			Numerous pockmarks and large dried areas.

\*The quality designations specified herein are not applicable to birds possessing any of the following conditions: Dirty or bloody head or carcass, dirty feet or vent, fan feathers or neck feathers or garter feathers, or feed in the crop.

<sup>1</sup> Total aggregate length of all cuts and tears including incision for removal of the crop or its contents.

<sup>2</sup> Maximum diameter of aggregate areas of all flesh bruises, skin bruises, and discolorations.

<sup>3</sup> No limit on size and number of areas of discoloration and flesh bruises if such areas do not render any part of the carcass unfit for food.

STANDARDS EFFECTIVE JANUARY 1, 1950



inspector, or by an inspector for some other approved agency as a prerequisite to grading. The birds are graded by a Federal or Federal-State grader. Ready-to-cook birds that have been graded and inspected, or their containers, may be identified by a Federal grade mark such as that shown in figure 33, under the same conditions as those mentioned for dressed poultry, under (1), above. However, if such a grade mark is used, the Federal inspection mark (fig. 34) must be used with it, or a Federal combination mark, illustrated in figure 35, can be used when the inspection was made by a Federal inspector. If the inspection was made by an inspector from an approved agency other than the United States Department of Agriculture, some identification other than the Federal inspection mark must be used with the grade mark to show that the birds were so inspected.



FIGURE 33.—A Federal grade mark for ready-to-cook chickens.



FIGURE 34.—The Federal inspection mark.



FIGURE 35.—A Federal combination mark, bearing the inspection and grade marks.

(3) *Inspection of dressed poultry for processing as ready-to-cook poultry.* Under this inspection service, a Federal inspector examines dressed poultry for wholesomeness and condition while the birds are being eviscerated. The ready-to-cook birds (whole or cut-up, prepared from such poultry) or the containers in which they are packed can be identified with the inspection mark (fig. 34).

For a more detailed explanation of the grading and inspection programs and services offered by the United States Department of Agriculture, write the Inspection and Grading Division, Poultry Branch, Production and Marketing Administration, United States Department of Agriculture, Washington 25, D. C.

## PACKAGING PROCESSED POULTRY

No matter how good the quality of poultry or how well the poultry has been dressed or eviscerated<sup>22</sup> and graded, much of the sales value is lost if such poultry is not well packaged. An attractive package helps to make sales, and considerable money is lost each year by operators who do not take the necessary precautions in packaging their processed poultry.

All containers and packaging materials used in packaging processed poultry should be new and of sufficient strength to carry the birds in

<sup>22</sup> See definitions on p. II.

good condition. The containers should be made of odorless basic materials that will not contaminate or lead to contamination of the product.<sup>23</sup>

Dressed and ready-to-cook poultry to be sold chilled but not frozen is packaged after dressing or eviscerating and chilling. Processed birds that are to be sold frozen can be packaged before or after freezing. At the time of packaging, dressed poultry should be clean and free from leakage of the vent which could result in direct contamination of the birds or of the ice surrounding the birds.

### PACKING CHILLED POULTRY FOR SHIPMENT

When dressed or ready-to-cook poultry is to be shipped to market in a chilled (not frozen) condition, it can be ice-packed or dry-packed in boxes, barrels, or drums, whether each bird is individually wrapped or not. An ice-pack is used when the chilled birds are to be shipped in trucks having no mechanical refrigeration, or by express. A dry-

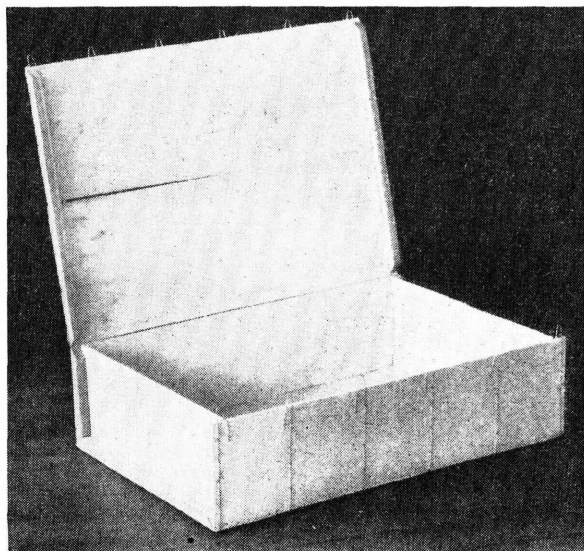


FIGURE 36.—A wire-bound box used for packing processed poultry.

pack (no ice) is used when such birds are to be shipped in refrigerated trucks or railroad cars.

Although boxes for shipping chilled processed poultry are available in many sizes, table 2 shows the most commonly used sizes for wire-bound (fig. 36), fiber, or wooden boxes.

When the birds are packed in these boxes, without being individually wrapped, two paper liners are used in each box. These liners should be at least 2 inches wider than the length and width of the box. They are usually made of vegetable parchment paper, having a

<sup>23</sup> See footnote 12.

basis weight <sup>24</sup> of from 27 to 35 pounds; however, they may be made of other material that performs equally as well.

When packing chilled dressed or ready-to-cook poultry in barrels, two sizes of wooden slack barrels are generally used. One barrel, 19 $\frac{1}{8}$  inches in diameter and 30 inches in depth, holds up to 250 pounds of poultry; and the other, 17 $\frac{1}{8}$  inches in diameter and 30 inches in depth, holds up to 225 pounds of processed poultry. Wire-bound barrels each having a diameter of 20 $\frac{1}{2}$  inches and a depth of 31 inches are used to some extent. In barrels, three liners of the same construction as that of the liners for boxes should be used. These liners should be wide enough so that they will completely line the barrel and when folded over will result in three thicknesses of paper across the top.

After the liners have been properly inserted in boxes (broiler), or barrels, in which processed poultry is to be ice-packed, ice is added in the following manner: First, a layer of crushed clean ice is placed in the bottom of the container, then a layer of poultry, then about 3 inches of ice, another layer of poultry, and so on, until the barrel or box is filled to within 3 to 5 inches of the top. The last 3 to 5 inches is filled with ice, then the cover is placed on the container (fig. 37).

TABLE 2.—*Recommended sizes for domestic, single-layer type, wire-bound, fiber, or wooden boxes for packing processed poultry, by kind and class of poultry*

Kind and class of poultry	Approximate weight of poultry in box <sup>1</sup>	Inside dimensions of box <sup>2</sup>		
		Length	Width	Depth
	<i>Pounds</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
Chickens, broilers, or fryers	70	22	16	10
Chickens	36-41	18	14	7 $\frac{1}{4}$
	42-53	20	15 $\frac{1}{2}$	7 $\frac{1}{2}$
	54-59	21	16 $\frac{1}{2}$	7 $\frac{3}{4}$
	60-65	22	17	8
Turkeys	48-60	25	21	6 $\frac{1}{4}$
	60-85	28	24	6 $\frac{1}{4}$
	85-105	30	22	8 $\frac{1}{2}$
Ducks	48-60	24	16	8
Geese	48-60	26 $\frac{1}{2}$	21	5 $\frac{1}{4}$

<sup>1</sup> All weights are for processed poultry on a dry-packed basis, except those for chicken broilers, which weigh 70 pounds, on an ice-packed basis.

<sup>2</sup> These boxes, except the chicken broiler box, are one-layer type boxes (only one layer of birds packed per box).

In dry packing chilled processed birds that are not individually wrapped in boxes for shipment to market, the same kind of liners are employed as those used in ice packing. The most common method of box packing such poultry is the breast-up method (fig. 38). This consists of packing the birds in one layer of two rows, breast up, with heads tucked under the bodies on each side of the box. The feet of the carcasses in each row fall underneath the carcasses in the opposite row.

Chilled dressed birds are often dry packed in fiber drums without liners, since the drums are waxed on the inside and waterproofed on

<sup>24</sup> Basis weight means the weight of 500 sheets of paper, each sheet measuring 24 inches by 36 inches.



FIGURE 37.—The top layer of ice being placed in a slack barrel holding chilled dressed turkeys.

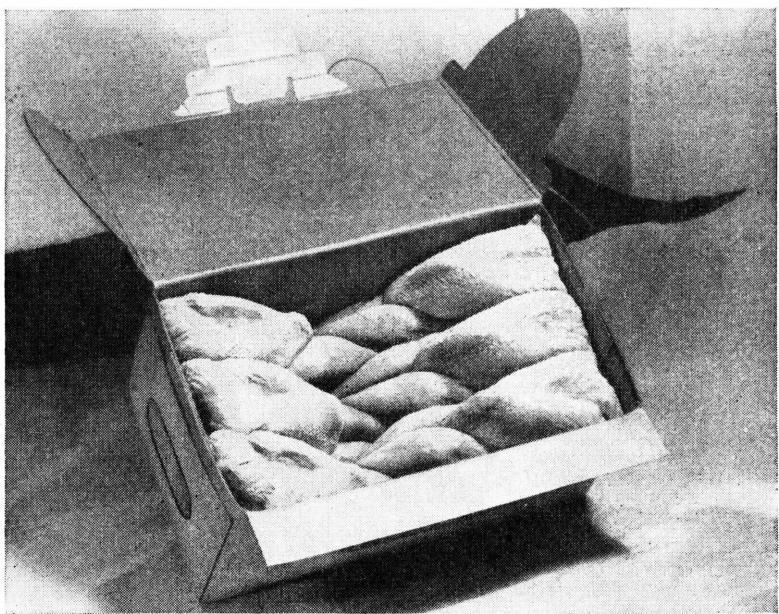
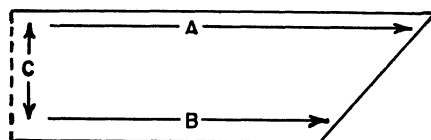


FIGURE 38.—The breast-up method of packing poultry in a one-layer type fiber box.



the outside. Large birds are usually packed in layers of three birds, each layer with the feet of two birds falling beneath the third bird.

Head wraps are sometimes used on dressed birds, particularly when they are to be sold to stores. They are usually made of vegetable parchment or wet-waxed paper. Table 3 shows the recommended sizes for these head wraps; figure 39 illustrates their shape.



PMA-19579

FIGURE 39.—Poultry head wraps showing the letter identification for the dimensions given in table 3.

TABLE 3.—*Recommended sizes for poultry head wraps, by kinds of processed poultry*

Kind of poultry	Class	Dimensions of head wraps		
		A <sup>1</sup>	B <sup>2</sup>	C <sup>3</sup>
		<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
Chickens	Broilers	10	8	5
	Fowl and small roasters	12	6	6
	Large roasters and cocks	15	7½	7½
	Small	14	7	7
Turkeys	Large	18	9	9
	Extra large	20	10	10

<sup>1</sup> Length of long side of head wrap (fig. 39).

<sup>2</sup> Length of short side of head wrap (fig. 39).

<sup>3</sup> Width of head wrap (fig. 39).

## PACKING FROZEN POULTRY FOR SHIPMENT

Ready-to-cook poultry (whole birds) that is to be held only for a relatively short period of time can be packed and frozen for shipment, without being individually wrapped, in the same boxes that are used for dry packing chilled poultry (see table 2). However, the liners used when such birds are packed should be made of wet-waxed paper having a basis weight <sup>25</sup> of from 35 to 40 pounds, or of some other equally good paper. The wet-waxed paper should be waxed on one side with from 20 to 40 percent of microcrystalline wax by weight.

Ready-to-cook birds are sometimes placed in these boxes without liners but with a top sheet made of wet-waxed paper or aluminum foil placed over the top layer of birds after they are packed in the boxes.

For packing these whole birds, the breast-up method is usually employed. (See the information on dry packing of chilled poultry, p. 50.) Such poultry is usually frozen after being packed in boxes.

Ready-to-cook poultry (whole birds) that may be held for a relatively long period of time, should be individually wrapped, or each

<sup>25</sup> See footnote 24.

bird should be placed in a bag made of film, and packed in boxes for freezing and shipment; or the individually wrapped or "bagged" birds can be frozen first and then packed in boxes for shipment (fig. 40).

Individual birds may be wrapped in film or paper wraps, or placed in film or paper bags, frozen, and then packed in individual waxed paperboard cartons; or they may be wrapped or "bagged," packed in these individual paperboard cartons and then frozen. Two, four, six, or eight of these cartoned birds can be placed in a shipping box for shipment to market.

Fiber boxes may be used in the manner just described for paperboard boxes, or they may be used as shipping boxes, particularly if large birds are packed in them (fig. 41).

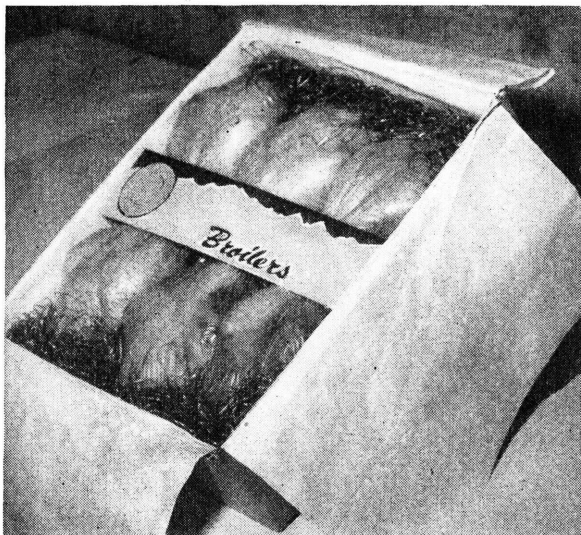


FIGURE 40.—A premium pack of ready-to-cook chickens each of which has been vacuum-packed in a plastic film bag and placed in a lined fiber box for freezing. Such birds are packed in the same manner in wire-bound and wooden boxes.

Cut-up poultry can be packed in paperboard cartons, illustrated in figure 42, frozen, and then packed in a shipping container for shipment. Poultry parts such as legs, breasts, wings, backs, feet, gizzards, livers, and necks, or any combinations of these parts, or halves of birds may be packaged in these cartons.

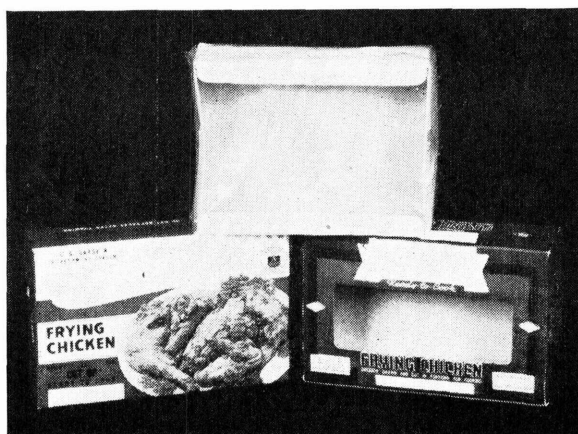
### PACKAGING FOR RETAIL SALES

For use in a display case in the farm salesroom or in large roadside stands, chilled dressed or whole ready-to-cook birds can be wrapped in a transparent or plastic film. In this type of packaging, a bird may be placed on a paperboard tray and the film wrapped around the tray and bird (fig. 43); or the bird can be wrapped and then placed on a backing board (a flat piece of paperboard); or the dressed bird may be displayed in the film alone.



PMA-19185

FIGURE 41.—Fiber boxes in each of which one frozen ready-to-cook turkey may be shipped.



PMA-19186

FIGURE 42.—Paperboard cartons in which cut-up poultry is frozen. From left to right, a carton overwrapped with paper, an open-faced carton overwrapped with a film, and a windowed carton.

After the birds are wrapped, two or three holes should be made in the film to allow for the escape of gases that may accumulate. Table 4 shows the recommended film sheet sizes for different kinds and classes of chilled processed whole poultry.

Chilled, cut-up ready-to-cook poultry parts are usually packaged in paperboard trays and overwrapped with a film for display in the same manner as that for the whole birds.

For retail routes, chilled dressed or ready-to-cook poultry can be delivered wrapped in the manner just described, or whole birds may be wrapped in vegetable parchment or butcher paper and delivered:



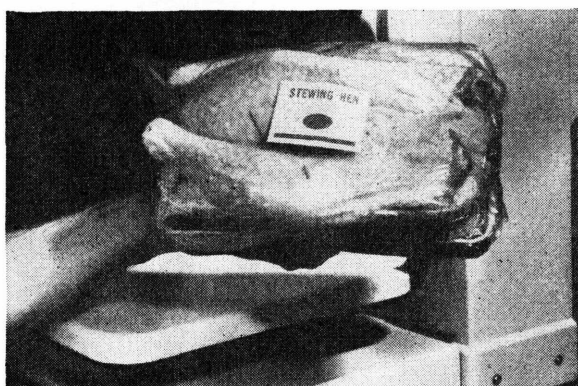


FIGURE 43.—A tray-wrapped stewing chicken.

*Provided*, That some method is devised for keeping the birds at a temperature of about 40° F. while en route. (See "Transporting Poultry," p. 63.)

Frozen whole ready-to-cook birds can be placed in bags made of plastic or transparent film, frozen and displayed; or they may be delivered on retail routes after being handled in this manner. Since packages containing frozen poultry should be as airtight as possible, some method of removing the air from the package after the bird is placed in the bag should be devised. Figure 44 shows the steps in one method of packaging whole birds in bags for freezing.

TABLE 4.—*Recommended film sheet sizes for wrapping chilled dressed and ready-to-cook poultry, by kind of poultry*

A. DRESSED BIRDS

Kind of poultry	Class, or relative size of bird	Film sheet size	
		From	To
		Inches	Inches
Chickens	Broilers or fryers	16 x 18	18 x 20.
	Roasters	18 x 20	20 x 20.
	Hens, or stewing chickens, or fowl.	18 x 20	20 x 20.
Turkeys	Small	28 x 30	
	Medium	30 x 35	
	Large	33 x 36	
Ducks	Ducklings	18 x 20	20 x 20.

B. READY-TO-COOK BIRDS

Chickens	Broilers or fryers	14 x 16 or 16 x 18	14 x 16; 16 x 18; or 18 x 20.
	Roasters	18 x 20 or 20 x 20	16 x 18 or 20 x 20.
	Hens, stewing chickens, or fowl.	16 x 18; 18 x 20; or 20 x 20.	16 x 18 or 20 x 20.
Turkeys	Small	25 x 28	22 x 26 or 26 x 30.
	Medium	29 x 32	26 x 30 or 30 x 34.
	Large	32 x 35	30 x 34 or 33 x 36.
Ducks	Ducklings	18 x 20 or 20 x 22	16 x 18 or 20 x 20.

Another method of packaging birds in a plastic film bag for freezing includes the use of mechanical equipment for exhausting the air from the bag after the bird is placed in it. This makes practically a vacuum pack.

Still another method of wrapping a bird for freezing and subsequent sale to consumers is by using a stockinette wrap. After the bird is packed in a film bag, it is inserted in a stockinette wrap (fig. 45). The stockinette wrap protects the film bag from physical injury.

Frozen whole ready-to-cook birds that have been packed in paper-board or fiber boxes, such as those shown in figure 41, can be displayed or delivered to customers on retail routes. Frozen cut-up ready-to-cook parts packed in cartons, such as those shown in figure 42, can also be displayed or delivered on retail routes.

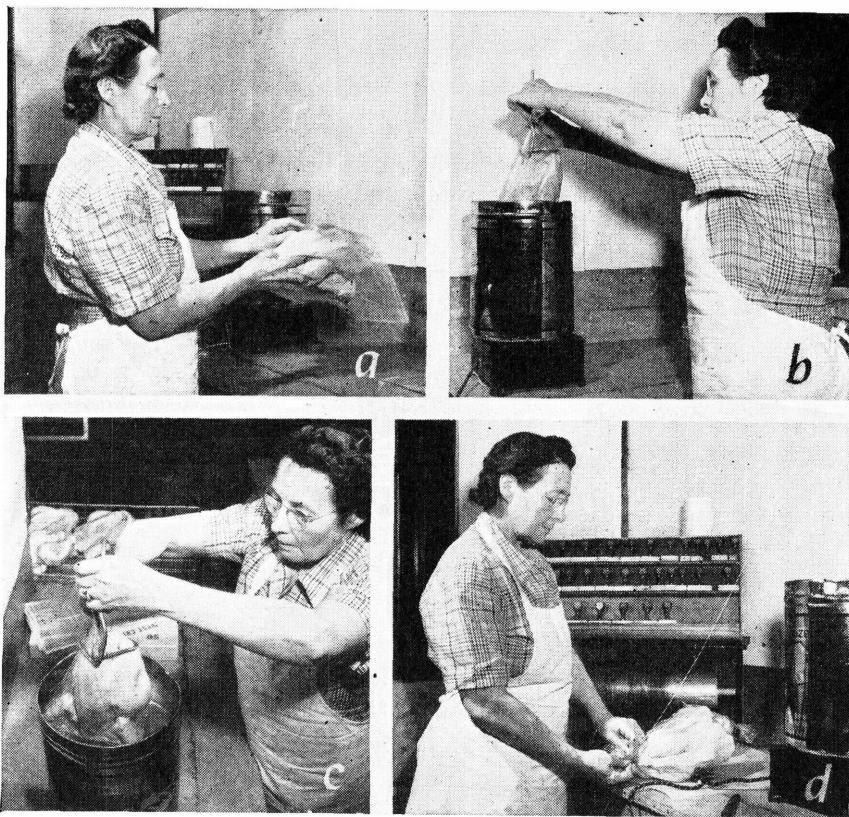


FIGURE 44.—Packaging a bird in a plastic bag, prior to freezing: *a*, Inserting the bird; *b*, placing the loop of a steel bar around the mouth of the bag preparatory to submerging in boiling water. After it is submerged and the air forced out, the mouth of the bag is closed by twisting; *c*, removing bird from boiling water; *d*, tying twisted closure.



## **FREEZING AND STORING PROCESSED POULTRY**

Particularly in large farm processing plants, adequate freezing and storing facilities are often valuable in making it possible to freeze poultry when prices are seasonally low, to sell when prices have risen. Also, poultrymen find that young birds should be slaughtered at certain weights in order to make the most economical gains, or to be sure that they have available the size in greatest demand by the market.

Ready-to-cook birds should be chilled before freezing. If they have been eviscerated cold, no further chilling is necessary as long as they are frozen immediately after eviscerating or cutting up. If they have been warm eviscerated, they should be chilled before freezing.

After birds are ready to freeze (wrapped or unwrapped, in lined boxes or in plain boxes), they may be frozen in a small freezer cabinet (fig. 46), or in a farm "walk-in" freezer, or sent to a locker plant for freezing.

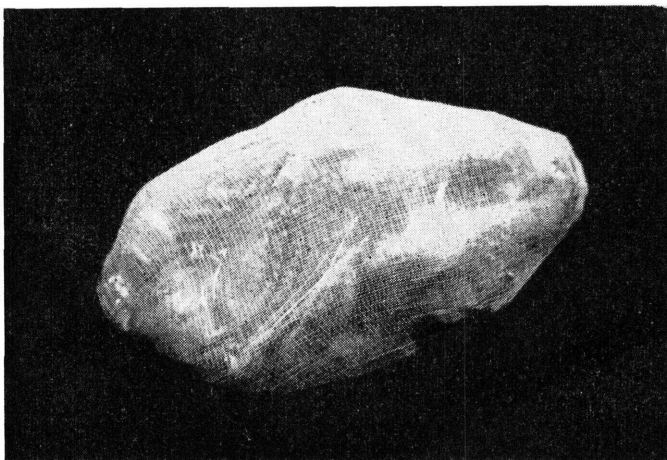


FIGURE 45.—A ready-to-cook bird packed in a film bag over which a stockinette has been drawn.

Birds should be frozen immediately after wrapping or packaging at  $-10^{\circ}$  F. with circulated air, or  $-20^{\circ}$  F. with still air. Temperatures of from  $-20^{\circ}$  to  $-40^{\circ}$  F. are desirable. As a guide to freezing time, a carcass or parts weighing less than 8 pounds should freeze solid in from 48 to 60 hours. Any ready-to-cook poultry should be frozen solid in less than 60 hours. Freezing rooms should be equipped with floor racks or pallets. Fans to insure air circulation are very desirable.

Frozen poultry should be stored at  $0^{\circ}$  F. or below with the temperature maintained as constant as possible. In many cases, the home freezer in rural homes can be used to advantage in conjunction with a locker plant. For those who live at a distance from a locker plant, some form of home storage would be valuable. When poultry is prepared at the farm for freezing and storing at the locker plant, some means should be provided whereby the prepared poultry may be kept

cold during the time that elapses between its preparation and final freezing, in order to prevent spoilage.

When poultry is first frozen, it appears slightly darker than normal, especially those parts of the birds that are not well covered with fat. Fat areas stand out in sharp contrast to the rest of the carcass. After the carcasses have been frozen for about 3 weeks, their color becomes brighter and more uniform. It does not assume its original fresh appearance, however, until completely defrosted. If the freezing process is slow, this darkened appearance is intensified and may last throughout the storage period.

When frozen poultry is held for a period of time under severely fluctuating temperatures and humidity conditions, evaporation of the moisture from the skin of the carcass may be so great that it causes a



FIGURE 46.—Placing film-wrapped and carton-packed chickens in a freezer.

collapse of the fresh cells. This causes light-colored pockmarks to appear on the skin. Such a condition is called freezer burn, which is the outstanding visual defect of refrigerated poultry. Although freezer burn may not affect the flavor of the meat, it reduces the sales value of the processed poultry by several cents per pound. Freezer burn generally appears first around the feather follicles, or where the flesh of a bird comes in contact with the box liner or the box, so that the moisture is absorbed directly from the flesh into the paper or box material. Freezer burn can be lessened by packaging the birds properly and by maintaining proper storage conditions.

Many poultrymen will need cold *storing* facilities. If a producer is selling poultry at the farm or in public markets, he will need holding space, as there is no way by which he can foretell demand (fig.



31). A poultryman shipping to market may have an order canceled or held up. In this case, it is also desirable to have storing facilities.

Chilled dressed or ready-to-cook poultry, box or barrel packed, or individually wrapped for retail display should not be held longer than 72 hours at a temperature not exceeding 36° F. Such poultry should not be held as low as the freezing point for this period. Poultry to be held for longer periods should be eviscerated immediately after killing and then frozen. For poultrymen having a "walk-in" cooler (fig. 16), the maintenance of temperatures between 32° and 36° F. is no problem. Refrigerated rooms usually have moderate air movement, which is important.

On farms not having "walk-in" coolers, a cool room or the cellar is satisfactory under the following conditions: For birds ice packed in boxes or barrels, the ice should be renewed as often as necessary to keep the birds fresh during the holding period. When it is necessary for a producer having no cold room, to temporarily hold birds that have been dry packed in boxes, the birds should be repacked in ice and the ice replenished as often as necessary.

Even when there is a farm salesroom or roadside stand in which a display case, capable of maintaining a temperature of 36° F. or lower, is used for retailing individually tray-wrapped chilled dressed birds, the birds should not be held in the case longer than 72 hours. If the display case is not capable of maintaining temperatures of 36° F. and lower, or the poultry is displayed on crushed ice, the poultry should be placed in a refrigerated box overnight during the 72-hour period. If a refrigerator is not available, the poultry can be ice packed in boxes.

## **SELLING POULTRY**

Market poultry may be a very important source of income to the poultry producer. All the care possible in handling and preparing poultry for market will mean little if the birds are not sold advantageously or at the best possible price. For this reason, particular attention should be given this phase of marketing from the farm.

### **METHODS OF SELLING**

Because there is considerable loss in shipping poultry long distances, it is often desirable to sell poultry at the farm or on a nearby market. Among the advantages in selling in this manner are: The producer takes part in the entire sale; there is little, if any, shrinkage loss; the selling price is agreed on or established before the birds are sold; money is received at the time the birds are sold; a reputation for a high-quality product is more quickly established; and when selling direct to the consumer, the number of middlemen that ordinarily buy and sell poultry, as it passes through a marketing channel, may be reduced. Very often, a producer can receive more money for his poultry by selling direct to the consumer because the more times a product is bought and sold before it is finally consumed the less money, in proportion, the producer can expect to receive for it. The possibilities for a producer to sell direct to the consumer depend, to a great extent, on the location of his farm in relation to markets.

Local dealers, processors, shippers, or country storekeepers may

buy live poultry in a farming area. The producer may truck his own birds to them; or these buyers may send their own trucks to the farm; or the buyers may depend on live poultry handlers or hucksters who deliver them the kind and amount of poultry they want.

Poultry producers in some sections of the country can often receive competitive bids from different buyers. When this is possible, a producer should select a few buyers and encourage them to stop at the farm.

Most States require live poultry buyers to receive a bill of sale with each purchase. This requirement is to protect against thieving. Another method of protecting birds against theft is by tattooing. Tattooing provides positive identification of a producer's birds.

In certain regions there is some buying of dressed and ready-to-cook poultry at the farm by retail distributors, local institutions, restaurants, hotels, and stores that sell cut-up poultry (poultry parts). The producer may truck the birds to these buyers or they may use their own trucks for transporting the birds from the farm to their places of business.

Many highways leading to larger cities are lined with roadside stands selling eggs, poultry, and other farm products. Sometimes these stands handle products from one farm and sometimes from several farms in the area. When products are obtained from the local area, the stocks of these stands are usually seasonal. In some States, roadside stand operators have formed organizations which guarantee to sell produce only for their area or adjacent farms.

In some sections, farm salesrooms have increased in number during the last few years. They are particularly popular where a large farm processing operation is established near a large consuming center. (See fig. 47, and the farm salesroom on the cover.)

For large roadside stands or farm salesrooms that sell a great variety of produce, display cases are available in which the temperatures can be kept below 40° F., for chilled poultry. Small self-service meat cases are sometimes used (fig. 48).

Frozen food cases, in which frozen poultry can be kept and displayed along with other frozen foods, if necessary, are available. Cases in which the temperature may be kept below 40° F., for fresh chilled poultry, but which have a separate section for holding frozen poultry, are also available. At some smaller roadside stands, and in some salesrooms, a display case is used for chilled poultry only, the frozen poultry being kept in the freezer cabinets and taken out when sold.

In salesrooms or at roadside stands that do not have a display case which maintains proper holding temperatures for chilled poultry, such poultry should be displayed on crushed ice and sprinkled with finely crushed ice to maintain its bloom and pleasing appearance to the consumer. Poultry that has been ice-chilled and that is left unsold at the end of the day should be packed in crushed ice, in well-drained boxes, for holding overnight. If dressed poultry, it should be sold within 3 days and if ready-to-cook poultry, within 2 days after first displayed. Poultry that has been air-chilled and that is left unsold at the end of the day, should be hung up in the refrigerator, or packed in ice for holding overnight. Frozen ready-to-cook whole or cut-up poultry can be kept in freezer cabinets and brought out to sell.



FIGURE 47.—A corner of a farm salesroom showing one type of refrigerated cabinet. The packages of frozen poultry have just been taken from the cabinet.



FIGURE 48.—A corner of a large self-service meat case. Smaller cases more adaptable to farm use are available.

When dressed poultry is displayed in packages, such as trays over-wrapped with cellophane, or unpackaged on ice, to be eviscerated or cut-up at the request of the purchaser, the following equipment is necessary in a farm salesroom or at a large roadside stand: A solid block or bench; a stiff bladed sharp knife; a skewer, hoop, or puller for drawing tendons and parchment paper to be laid on the block. Eviscerating and cutting up would be done in accordance with the steps as outlined beginning with pages 27 and 32, respectively.

Sometimes poultry producers or their wives sell poultry in one of the local municipal markets, such as a "farmers'" or "women's" market. This method of selling is usually carried on in connection with the selling of other farm produce. Live birds should be kept in clean coops and kept in the shade when possible. When there are no refrigeration facilities on these markets, ice on which processed poultry can be placed should be provided for displaying, or the birds should be kept in covered, iced boxes.

Processed poultry is sold on egg routes or routes on which other products are sold. When poultry is sold in this way, provisions should be made for keeping the birds at 40° F., or under, whether deliveries are made by automobile or truck.

In several hundred localities poultry producers have set up organizations to market their broilers, farm chickens, and turkeys for them. Some of these organizations in the Northeast are auction associations which sell live poultry. Other associations have dressing plants to dress the poultry and market it in the form and to the outlets bringing the greatest net returns to the producers. These cooperative associations bring a large volume of similar products together, making it possible for the members to develop (1) more efficient processing methods and (2) more effective marketing methods, and to obtain (3) a larger share of the consumer's dollar.

If a producer has a nonprofit organization to do the dressing and marketing for him he will be able to spend more or all of his time on the production phase and thus obtain more profit from both production and marketing.<sup>26</sup>

If live birds are sold at auctions held by cooperatives, they should be transferred from the producer's coops to auction coops to prevent the spread of disease.

Besides the methods discussed above, frozen ready-to-cook poultry is sometimes packed in dry ice and shipped to consumers by parcel post.

## PRICING

Prices that can be obtained for poultry when the birds are sold to buyers or distributors are dependent on the factors discussed under "Fluctuation of Poultry Prices" on page 6. Prices for live poultry sold direct to the consumer at roadside stands should be based on the prevailing market prices for such poultry in nearby markets.

Shrinkage, processing, and packaging costs should be taken into consideration in establishing minimum sales prices for processed poultry sold in farm salesrooms or at roadside stands. The method of computing these prices is given under "Live or Processed Poultry."

---

<sup>26</sup> See footnote 6.



If processed birds are sold on retail routes, producers selling poultry in this manner may want to add the cost or part of the cost of operating the automobile or truck to the estimated minimum sales price.

No matter what method is used in selling poultry, remember that quality helps to determine price. Sell the top-quality birds separately from those of poorer grades. If good-quality birds are mixed with those of poor quality, the price obtained is usually based on the birds of lower quality.

## ADVERTISING

The objective of advertising is, of course, to make sales. Some of the main advertising mediums are as follows:

*Local newspapers* provide an economical and effective medium for retail advertising. Prices can be kept in line with daily market conditions.

*Window displays* for those who have retail salesrooms are highly effective. A plain window sign featuring an attractive price is a good business getter.

*Outdoor signs*, when permanent, constitute the reminder type of advertising. Temporary signs may serve in an advertising campaign. Roadside signs should always be used by producers in selling at roadside stands or in retail salesrooms near the road. They should face both directions on the highway.

*Inserts* in poultry cartons or packages, attractively designed and printed, should supply special information of a health, educational, or culinary nature. They may be used in a series.

*Brand labels*, if the quality of the product is good, cause consumers to associate that particular name with a high-quality product.

*Packages*. Special attention should be given to the design of packages, labels, and wrappers. A good package should protect and preserve the contents; open and reclose easily; be of desirable shape and size; and possess distinction.

## TRANSPORTING POULTRY

Some poultrymen have their own trucks and deliver their birds to the local market, whether it be a store, a processing plant, or a point from which shipments are made. They deliver on retail routes by truck or automobile.

Live birds should be transported in the cool part of the day, if possible. The coops should be loaded and securely fastened on trucks so that there is plenty of air circulation through the inside stacks. The birds should be protected in extremely hot or cold weather. The top layer of coops in an open truck should be covered with a canvas or tarpaulin. In bad weather, side drops may be needed. No more stops than are absolutely necessary should be made while traveling.

If live poultry is to be shipped by express the requirements of the express companies must be met.

In transporting processed poultry, the producer should remember that any food which is ultimately transported in interstate commerce or which is guaranteed to comply with the requirements of Federal law is subject to the Federal Food, Drug, and Cosmetic Act. Under this law, there have been no specific regulations covering the shipment

of poultry from farms, but the general provisions of the law call for the production of clean, sound, and wholesome birds which have been prepared, packed, and held under sanitary conditions, and which are not the products of diseased birds or birds that have died other than by slaughter. This law further includes certain labeling requirements. Further information on these points may be obtained from the Food and Drug Administration, Federal Security Agency, Washington 25, D. C.

For the delivery of dressed or ready-to-cook poultry to customers, some means of carrying the birds at a temperature of 40° F. or less, should be provided. A large box, with the center part walled off, can be used. The center part should be filled with ice and the wrapped birds (either wrapped individually or all of them wrapped in a liner) should be placed in the box between the center partition and the outside wall. Where ice is not available, and for quick delivery, well-chilled or frozen birds should be wrapped with several layers of paper (newspapers can be used if they don't come into contact with the birds) and placed in a box and covered. One or two manufacturers are making insulated boxes in which ice or dry ice can be used to maintain low temperatures.

For delivery of ice- or dry-packed poultry in trucks to a railroad shipping point, the boxes or barrels should be fastened tightly on the truck. Open trucks should be covered by a tarpaulin against the summer sun.

The United States Post Office Department has regulations pertaining to the shipment of poultry by parcel post. Consult local post office officials. A newly developed pack is now used to ship a frozen ready-to-cook bird by parcel post. Dry ice is used to preserve the bird, the ice being placed in bags and put into the box with the bird. One manufacturer has made a box in which there is a special compartment for dry ice.

## **FACTORS RELATED TO PROFITS IN MARKETING PROCESSED POULTRY**

In a fairly recent study,<sup>27</sup> the factors affecting costs, returns, and profits in marketing farm chickens were found to be the number of chickens processed, the style of processing, the classes of chickens processed, the method of picking, the number of chickens processed per hour, and the pricing policy. Although these factors are from a study conducted on chickens in one Northeastern State, they are valuable, for comparative purposes, to chicken producers in other States. The general principles would apply to other kinds of poultry that are processed on farms. The brief discussion of these factors given below was taken from the publication on the results of this study.

As the number of chickens processed increased, total operating costs declined. The range in operating costs was from 13.8 cents per pound for the group with fewest chickens to 5.7 cents per pound for the group with the largest volume \* \* \*.

---

<sup>27</sup> See footnote 5.

The high operating costs of those processing less than 1,000 chickens resulted in a loss of 2.4 cents per pound. All other groups had a profit—the largest was 3.8 cents per pound.

Returns for man labor generally increased as volume increased and ranged from 47 cents per hour for those who dressed less than 1,000 chickens, to \$1.31 per hour for the group dressing 10,000 or more. This difference was due to the fact that the live weight processed per hour ranged from 7.8 pounds to 21.1 pounds. The large businesses had larger profits and a much higher level of efficiency.

Costs, returns, and profits were related to style of processing used \* \* \*. Poultrymen who sold only New York dressed chickens had an operating cost of 6.2 cents per pound, as compared with 7.5 cents per pound for those selling only drawn (ready-to-cook) chickens. One cent of this 1.3-cent larger operating cost for the drawn (ready-to-cook) chickens was due to difference in labor cost. Drawing (eviscerating) chickens involves more work \* \* \*.

Profits on farms selling New York dressed chickens averaged 2.7 cents per pound, or \$1.14 per hour of labor. For those that sold only drawn (ready-to-cook) chickens, the profit amounted to 1.8 cents per pound, or 88 cents per hour of labor. The returns per pound of chicken were about the same regardless of the form in which the birds were sold.

No broilers or fryers were processed on 77 of the 184 farms studied; thirty-six poultrymen had an average of 92 percent of all their chickens in broilers and fryers. Poultrymen who had a larger proportion of broilers and fryers also processed a larger number of chickens.

Labor efficiency was greatest on farms that processed the most broilers and fryers. On farms where an average of 17 percent of all chickens processed were broilers and fryers 2.8 chickens were processed per hour \* \* \* and the group averaging 92 percent processed 6.8 chickens per hour.

The farms with no broilers and fryers processed 15.5 pounds of chicken per hour \* \* \*.

Operating costs decreased from 8 cents per pound for the group with smallest proportion of young chickens to 6.5 cents for the group with the most. This large decrease was due to decreased labor costs, and was most noticeable at low volume.

Return per hour of labor was \$1.29 for those that processed no broilers and fryers. This exceeded the returns for labor for all groups that processed broilers and fryers even though returns increased from 77.4 cents per hour for the group where broilers and fryers were less than 39 percent of all chickens to \$1.09 per hour for the group with more than 79 percent. This large increase was the result of more pounds being processed per hour in the high percentage group.

As the number of chickens picked by machine increased, the costs per chicken decreased. This also was true for the hand-picking method \* \* \*. The average number of chickens dressed by the 34 poultrymen who picked more than 1,000 chickens by hand was about the same as the number dressed by those

picking from 1,000 to 4,000 chickens with a mechanical picker. However, the average operating cost for the former was 6.8 cents per pound, as compared with 7.8 cents for the latter. Practically all the difference was due to building and equipment costs. The man-labor expense was 4.6 cents per pound in both instances and the number of chickens processed per hour was essentially the same. Apparently hand-picking was about as economical as machine-picking when 2,200 to 2,400 chickens were processed during the year, and more economical if fewer birds were processed. The group with the lowest volume had net losses of 3.6 cents per pound when picking with the machine and 1.9 cents per pound when picking by hand.

As the number of chickens dressed (processed) per hour increased, operating costs per pound decreased from 14.5 for those who dressed (processed) less than 4 chickens per hour, to 4.2 cents for those dressing (processing) more than 11 chickens per hour \* \* \*. Costs continued to decline as dressing efficiency increased, but at a slower rate. The cost of labor declined more rapidly than other costs as dressing (processing) efficiency increased. The labor cost for the most efficient group was 2.0 cents per pound, as compared with 9.8 cents for the least efficient group. The large loss of 4.7 cents per pound for those dressing (processing) less than 4 chickens per hour was due to both a low volume of business and inefficient operation.

The return per pound of chicken increased from 31.8 cents for those with low processing efficiency to 41.3 cents for those with high processing efficiency. It would have been better for those with low efficiency to have sold their birds alive rather than to dress (process) and sell them.

One of the most important things for a poultryman to remember in planning for the successful operation of a marketing-dressed (processed)-chicken business is the pricing policy \* \* \*. Of the 63 farms with all drawn (ready-to-cook) sales, 35 had less than 80 percent mark-up in price. These poultrymen had an average loss of 0.9 cent per pound; the other 28 with more than 80 percent mark-up had a profit of 5.7 cents per pound.

Of the 77 farms that sold only New York dressed chickens, 43 had less than a 40-percent mark-up in price—average 32. These farms had a net loss of 0.6 cent per pound. The 34 farms with a mark-up of more than 40 percent (average 62) had a net profit of 6.8 cents per pound. Although some of the difference in profits was due to costs, most of it was due to differences in the returns for the birds sold.

## **POINTS TO REMEMBER IN MARKETING FARM POULTRY**

### **In Planning a Marketing Program a Prospective Poultry Producer Should—**

1. Try to choose a farm near a good market. This may either be near a fairly large city or near several poultry buyers.
2. Since poultry production requires a high investment per bird, make careful inquiries as to the different types and sources of loans



available for financing the production phases and marketing operations.

3. Before building any production or marketing facilities, make a decision as to whether birds will be sold alive only, or whether investment in processing facilities would be wise. To do this:

- a. Compare usual prices paid for live and processed poultry.
  - b. Determine the number of buyers of poultry to ascertain whether there will be competition among them.
  - c. Determine the kinds and classes of poultry wanted by buyers of both live and processed poultry.
  - d. If processing is to be done, try to locate on a farm on a busy highway.
  - e. Be sure labor is available.
  - f. Processing facilities are expensive. Be sure to take into account the additional investment necessary to maintain this kind of marketing.
4. After deciding to process poultry, consider the following factors:
- a. The plant layout and arrangement of equipment and facilities. These factors can greatly affect efficiency.
  - b. The adequacy of facilities and equipment for the probable number of birds to be processed.
  - c. The kind of equipment best suited to the class of poultry to be produced.
  - d. The use of a picking machine, if the annual volume is more than about 2,000 birds.

5. Become acquainted with existing Federal, State, and municipal regulations which pertain to processing, transporting, selling, and other applicable operations.

6. Discuss all plans in detail with the county agent and poultry marketing specialists in the State college of agriculture. Avail yourself of the benefit of their experience. Remember that the marketing program is only one part of an over-all plan for becoming established in the poultry business.

### **In Preparing Live Poultry for Market the Small Producer of Market Poultry Should—**

1. Select birds for uniformity in size and quality. A uniform lot of birds of high quality is more attractive than a miscellaneous lot and will usually sell more readily at higher prices.

2. Feed a special finishing ration to some classes of poultry, under some conditions. For instance, old hens that are thin may need a short "special finishing" period; cockerels that have not been given diethylstilbestrol pellets may profit by "special finishing." Small flocks of ducks and geese are often given a fattening ration.

3. Place birds of different sizes and classes in separate coops that are clean and sanitary. Do not overcrowd birds in coops, particularly during hot weather.

### **In Preparing Live Poultry for Processing on the Farm the Producer Should—**

1. Process only those birds that show no evidences of disease or other conditions which may make them unfit for human consumption.

2. Finish birds by feeding a special fattening ration, if they have not been treated with diethylstilbestrol pellets, or if they have not been raised on high protein, well-balanced feeds.

3. Withhold feed from birds for at least 12 hours prior to killing. Provide plenty of water during this period.

#### **In Processing Poultry the Producer Should—**

1. Make every effort to produce a high-quality product and use efficient and sanitary processing equipment.

2. Thoroughly bleed and cleanly pick the birds.

3. Dress, eviscerate, or cut up birds according to market demands.

4. Chill the birds thoroughly, in clean water and ice or in a sanitary cooler, immediately after pinning, singeing, and washing.

#### **In Preparing Processed Poultry for Market the Producer Should—**

1. Grade birds for class, size, condition, and quality.

2. Use new, attractive, sufficiently strong wraps and containers made from materials that are odorless and that will not contaminate or lead to contamination of the poultry.

3. Pack birds of the same approximate weight group together.

4. If birds are to be frozen, they should be frozen immediately after wrapping or packaging at or below  $-10^{\circ}$  F. with circulated air or  $-20^{\circ}$  with still air. Ready-to-cook birds should be frozen solid in less than 60 hours.

5. Store frozen poultry at or below  $0^{\circ}$  F.

6. If poultry is to be shipped, mark the packages plainly with the name and address of the receiver and shipper, the kind of poultry, and the gross, tare, and net weights.

#### **In Selling Poultry the Producer Should—**

1. Cultivate nearby outlets when possible. Nearby selling often results in greater net returns.

2. Consider prevailing prices for live poultry in nearby markets before selling.

3. In retailing processed poultry, take shrinkage and processing costs as well as other necessary costs into consideration in establishing a sales price.

4. Sell top-quality birds separate from those of lower grade.

5. Advertise his products.

#### **In Transporting Poultry the Producer Should—**

1. Move his live birds during the cool part of the day or night, if possible.

2. Load and securely fasten live poultry coops on trucks so that air can circulate through the inside stacks. In hot or cold weather, cover the top layer of coops in an open truck with a canvas or tarpaulin. In extremely bad weather, side drops should be used.

3. In delivering iced or dry-packed poultry in trucks to a railroad shipping point or nearby market, fasten boxes or barrels securely to the truck. Open trucks should be covered by a tarpaulin against the summer sun.

4. Provide some means for holding processed poultry at a temperature of  $40^{\circ}$  F., or less, while making local deliveries.



